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OUR REGENCY HERITAGE

IT is at the present time especially interesting to consider the contribution of the Regency period to our national architecture, as owing to modern requirements an appreciable proportion has been swept away and most of the remainder seems likely to follow the same course. This has been recently emphasised by the proposals put forward in the town-planning scheme for Hove, which assumes that the eastern portion, including Brunswick-terrace and the adjacent squares, can have only a limited life and must eventually be replaced by very dissimilar types of building. Such a decision, which from some points of view looks logical and reasonable, would deprive us of features having a definite artistic value.

It is not only in Hove that this problem arises, but also in several quarters of the Metropolis, perhaps the most important being the terraces around Regent's Park. Regent-street has already gone, and while this was practically inevitable, the new street, despite its improved methods of building, is undoubtedly inferior to the old as a unified architectural composition. Are Regent's Park and Brunswick-terrace, Hove, to share the same fate? Is there no alternative to their departure into limbo?

While there were some previous examples indicating this trend in design, it was mainly in the later Georgian and Regency periods that the conception of uniting groups of houses into a single composition based, one may assume, on the design of a palace, took shape. We see it in a tentative form in the work of the brothers Adam and in Bedford-square, where the frontages are given a central feature and the end houses are emphasised; but Nash took up the idea more wholeheartedly and almost invariably handled his terrace designs as definitely aiming at the effect of one important building.

This, while purists might regard it as a falsification of purpose, was certainly a contribution towards urban dignity and may give a clue towards their rehabilitation to such an extent as would preserve the façades, which cover their main value as architectural designs.

We have from time to time given illustrations of methods for the conversion of large houses into groups of convenient flats, and some of these might be applicable to those in the Hove area; in fact, it is stated that many of these have already been sub-divided for separate dwellings, though the measure of reconstruction for this purpose is not regarded as fully adequate. In the case of the main terraces we do not regard this as the more appropriate treatment; the two principal ones, now comprising thirteen houses in each, could, by the removal of all but the façades and rooms immediately behind them, be replanned to provide an efficient and well-organised hotel which would accommodate about 200 guests on either casual or residential lines, and this unification would be more in accordance with the expression of the design than the present divided elements or any increased sub-divisions. It does not look as if this form of treatment would be uneconomic, as in each terrace some 300,000 cubic feet of sound building would be preserved.

The opponents of preservation are likely to say—Why all this pother about a type of design which is basically scenic? Is it not rather like continuing to drive a four-in-hand down the Brighton road when an automobile has proved itself far more efficient? To justify preservation it devolves upon us to make a reasoned claim for the merits of the Regency conception of architecture; to do this we must go back to the time of Palladio and his contemporaries, who developed this type of façade. In the general mass there are two elements, the horizontal and the vertical. The first we have already touched on, but as regards the second it can best be investigated by taking advantage of the traditional simile and employ musical terms: thus it may be said that from the base to the crown of a Palladian building there is a definite variation in "tempo," starting from a firm and deliberate one at the base, becoming more lively as we go upwards and then gradually closing off by the treatment of the crowning elements. The employment of components borrowed from classic structures as decoration assists in making a rhythmic connection between base and summit and ties together the more intimate details of the windows and other features in the wall face.

The Fundamentalist will regard this attitude with scorn, but what does he offer us instead? For a building with similar demands on each floor the façade shows an identical repetition from top to bottom, nothing marks the base and very little the summit; it may be "functional" but is no more interesting than a rather monotonous march tune, whereas the Palladian conception is comparable with a movement in a well-composed symphony.

It would be irrational to demand the continuance of the Regency traditions in the present day, but the existing position in design is obviously a transitional one which has tilted the balance towards pure engineering to the exclusion of other qualities hitherto regarded as essential elements in architectural expression. The links between architecture and sculpture have been loosened, and until these are restored to some extent the two arts are no longer supporting each other as they have done during all the more notable periods of artistic expression.

NOTES AND NEWS

The R.I.B.A. Secretaryship.

On Tuesday the Council of the Royal Institute of British Architects appointed as Secretary Mr. C. D. Spragg. Mr. Spragg, who joined the staff in 1913, became Assistant Secretary in 1926 and has been Acting Secretary since the retirement a year ago of Sir Ian MacAlister. He is 50, and served in the last war in Egypt and France with the Queen's Westminsters.

In congratulating Mr. Spragg on his appointment, we must also congratulate the Institute, which faces, in the period ahead, problems and difficulties which are probably greater than those confronting any other professional institution. In Mr. Spragg the Council have an officer with over 30 years of experience of architects and architectural politics. His balanced judgment, charm of manner and helpfulness in all things relating to matters and men will be of the greatest assistance to the Council in placing architecture and the men who serve it in the forefront of the reconstruction canvas. In wishing him success and good luck, we know we express the wishes of all architects who know him and his tireless and conscientious work for the good of the profession.

The Commons Chamber.

Mr. Sandys, in presenting in the Commons a Supplementary Estimate for £20,000 for the Houses of Parliament Buildings, explained that the money would cover certain preparatory work which was being undertaken as a result of the Report of the Select Committee on the Rebuilding of the House of Commons. The expenditure related mainly to professional fees, experimental work, preparatory boring, etc. Before the recent debate on the Select Committee's report took place in the House, the Government felt that some arrangements should be made to ensure that any important suggestions could be sifted and examined, and, if appropriate, adopted as amendments to the plan. The Prime Minister proposed that the Select Committee should be reappointed after the debate to consider any suggestions which did not conflict with the main decisions of the House. The Government had examined the suggestions made in the debate, and, apart from those which clearly conflicted with the decision of the House, very few detailed amendments of the plan were proposed. The Government and the members of the Select Committee agreed that they would not be justified in undertaking the rather elaborate procedure of reconstituting the Select Committee for this purpose. The Government therefore proposed to adopt the suggestion made in the debate that a small panel of members should be set up when the need arose, but at the moment there was no work going on. It was felt that they should postpone any work on this project, at any rate for a few months, until the work of repair of bomb damage in London was more advanced. If there was any conflict of views on the question of setting up a panel, an opportunity to discuss the matter would arise later.

An Appeal.

In our Correspondence columns this week, Mr. Philip Hepworth, who is Steward this year of the Artists' General Benevolent Institution, makes an appeal on behalf of that body which we earnestly commend to the consideration of our readers. Artists in general at the best of times rarely make more than a modest

MR. CYRIL DOUGLAS SPRAGG, who on Tuesday was appointed Secretary of the R.I.B.A.

living, while in times of war they are among the first to suffer loss of income. There has been acute suffering among artists and their families during the present war. We have no doubt that many of our readers who are able to do so will readily come to the support of those who are in misfortune, and who, at normal times, by their art provide one of the great charms and solaces of life.

Mars Group Lecture.

Mr. Maxwell Fry, B.Arch., F.R.I.B.A., who is back in this country from West Africa for a short time, will give a Mars Group public lecture in the Henry Jarvis Hall of the R.I.B.A. on March 26 at 7.15 p.m. His subject will be "Planning in West Africa." Sir Charles Reilly in the chair.

Quantity Surveyors and Building Contracts.

A meeting of members of the Chartered Surveyors' Institution who are qualified as quantity surveyors will be held at the Institution on Wednesday, March 21, at 5 p.m., when Mr. C. T. Every, F.S.I., will introduce a discussion on the Report on the Placing and Management of Building Contracts issued by the Central Council for Works and Buildings, of which Mr. Every is a member.

Bermondsey Borough Architect.

Applications are invited for the position of Architect to Bermondsey Borough Council at a salary of £1,000 per annum. Candidates should be members of the Royal Institute of British Architects and (unless already in the Council's service) must be under 45 years of age on April 1, 1945. Applications (on forms to be obtained from Mr. S. E. Freeman, Town Clerk, Municipal Offices, Spa-road, S.E.16) are returnable by March 25.

An Architect's Estate.

Mr. Henry Gilbert Gamble, F.R.I.B.A., of Lincoln, left £56,813.

An Appointment.

Messrs. Gilbert and Hobson, A.I.A.A., L./A.R.I.B.A., have been selected for appointment as architects in connection with part of the Farnham U.D.C.'s proposed post-war housing schemes.

Appointment of J.P.

The name of Mr. Ian Murray Leslie, who is Associate Editor of *The Builder*, has been inserted in the Commission of the Peace for the County of London.

Professional Announcements.

Mr. H. Victor Kerr, F.R.I.B.A., having been released from H.M. Forces, has resumed personal control of the practice of Victor Kerr and Colbourn from their *locum tenens*, and would be glad to receive up-to-date catalogues and information, particularly on permanent prefabrication, at 212, High Holborn (Tel. : Holborn 2400).

Owing to enemy action and to the absence on military service of Major R. J. Hugh Minty, F.R.I.B.A., and Capt. E. Daydon Griffiths, F.R.I.B.A., the practice of Messrs. Hugh Minty and Partners, FF.R.I.B.A., has been temporarily transferred to The Red House, Yateley, near Camberley, Surrey (telephone : Yateley 3235), where correspondence and trade circulars will be gladly received.

PRINCIPAL CONTENTS

ARTICLES	Page
LEADER : Our Regency Heritage	205
THE GUARANTEED HOUSE : A New Scheme of Certification	213
SHORT-TERM HOUSING PLANS. Mr. Willink's Survey	214
NATIONAL FEDERATION'S DIRECTOR	215
CORRESPONDENCE	216
REPAIR OF BOMB-DAMAGED BUILDINGS : Paper by S. B. Hamilton.	217
FUTURE CONSTRUCTION ...	222
ILLUSTRATIONS	
RESTORATION OF A REGENCY GROUP, STRATFORD-UPON-AVON. By F. W. B. Yorke ...	209
THE HOWARD HOUSE. By F. Gibberd	210

COMING EVENTS

Friday, March 16.

Housing Centre. Mr. George Hicks, M.P., to open "Post-War House Building" Exhibition 13, Suffolk-street, S.W.1. 4 p.m.

Tuesday, March 20.

The Builders' [Working Party] Association. Mr. T. P. Bennett, C.B.E., on "War Damage Repair." Westminster Hospital Medical School, Horseferry-road, S.W.1. 7.30 p.m.

Wednesday, March 21.

Chartered Surveyors' Institution. Mr. C. T. Every to introduce discussion on "Report on the Placing and Management of Building Contracts." 12, Great George-street, S.W.1. 5 p.m.

Thursday, March 22.

Institution of Structural Engineers. Dr. K. W. Mautner on "Pre-stressed Concrete in Structures of Annular Cross Section." 11, Upper Belgrave-street, S.W.1. 5.30 p.m.

Town and Country Planning Association. Dr. J. A. Steers on "Coastal Preservation and Planning." 28, King-street, Covent Garden, W.C.2. 1.15 p.m. (buffet lunch, 12.45 p.m.).

Friday, March 23.

Architects' Registration Council. Annual Council Meeting, 2 p.m.; Quarterly Meeting, 4 p.m. 66, Portland-place, W.1.

Saturday, March 24.

I.A.A.S. Mr. C. W. Glover on "Acoustics and Sound Insulation of Buildings." 75, Eaton-place, S.W.1. 2.30 p.m.

From *The Builder* of 1845.

Saturday, March 15, 1845.

Prince Albert.—His Royal Highness continues to manifest considerable interest in matters of science and art. A few days since . . . the Prince went over the new structure [the Palace of Westminster] with Mr. Barry and the contractor. . . . We should like to see the Prince occasionally call around him at the palace some of our poets, artists and men of science. The names of such, strange to say, are never seen in the list of the "royal dinner party."

MERSEYSIDE PLANNING PROPOSALS

BY H. V. LANCHESTER.

THE plan prepared for the development of Merseyside* covers the region situated on both sides of the River Mersey, the interests of which are focused upon the Port of Liverpool, having an area of approximately 450 square miles and extending from the borders of Preston in the north to those of Chester in the south, and from the estuary of the River Dee in the west to an eastern boundary parallel with, and about five miles to the west of, a line running through Preston, Wigan and Warrington. This plan, with the accompanying report, has been prepared by Mr. F. Longstreth Thompson with Mr. C. H. James as architectural consultant and an advisory joint planning committee, which includes representative technicians from all the 24 local authorities whose areas are included, 15 of these being in Lancashire and nine in Cheshire.

The purpose of the plan is to formulate a co-ordinated policy for the reconstruction and future development of the communities in this area. Its main objectives are to secure the best possible living conditions for the inhabitants and the best working conditions for the port, industry and agriculture upon which the prosperity of this region and the livelihood of its inhabitants depend. This can only be attained, in a region of such closely knit communities and interdependent interests, by a high degree of co-operation between the planning authorities in order to build up a satisfactory urban and rural structure for the region as a whole, based upon the conception of Merseyside as a single, though highly complex, organism.

* Merseyside Plan, 1944. F. Longstreth Thompson. H.M. Stationery Office, 7s. 6d.

The proposals aim at meeting the major problems which, as in other British cities, face the town-planner at the present time —the reconstruction of war-damaged and obsolete districts; the increase of permanent and balanced employment by the introduction of new and more varied industries; the preservation of fertile land for agriculture; the dispositions to be made for "overspell" of population; the equipment of residential groups with resources for community living; the improvement of traffic facilities by rail and road, on water and in the air; the preservation of historic and beautiful places; together with the maintenance of sound and appropriate planning and building traditions.

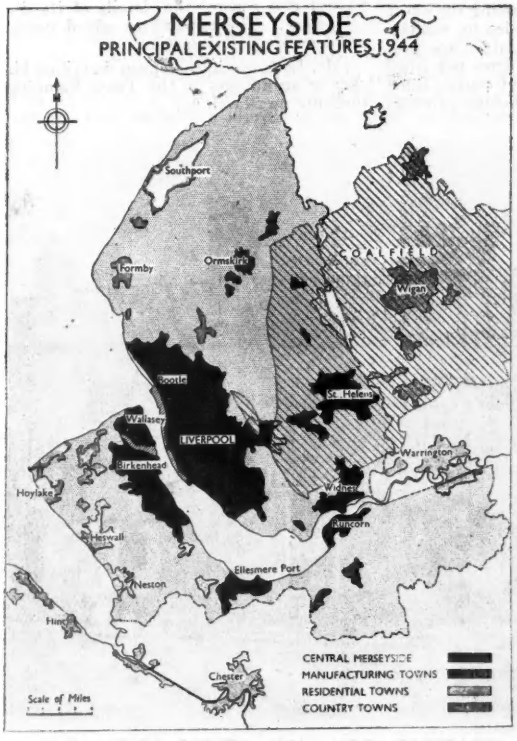
In the preparation of the plan a specific schedule of existing conditions has not been separately set down, as is often assumed to be an essential preparatory step, but investigations and information have provided most of the data desirable to justify the various proposals. Manufacturers' Associations, individual industrialists, transport managers and water engineers have been consulted, and the Social Science Department of Liverpool University has afforded most valuable aid to the study of conditions in the region and its special problems.

It is noted that the report of the S.W. Lancashire Joint Town Planning Advisory Committee, published in 1930, contained an admirable survey of conditions at that time and the general tenor of its recommendations is acceptable, although in the light of present tendencies, the urban zoning proposals anticipate a growth of population which now appears unlikely to be realised. The statutory planning schemes prepared or in course of preparation before the war, are also regarded as providing to an even greater degree for excessive future requirements in building areas; many of these pre-war schemes may need drastic revision.

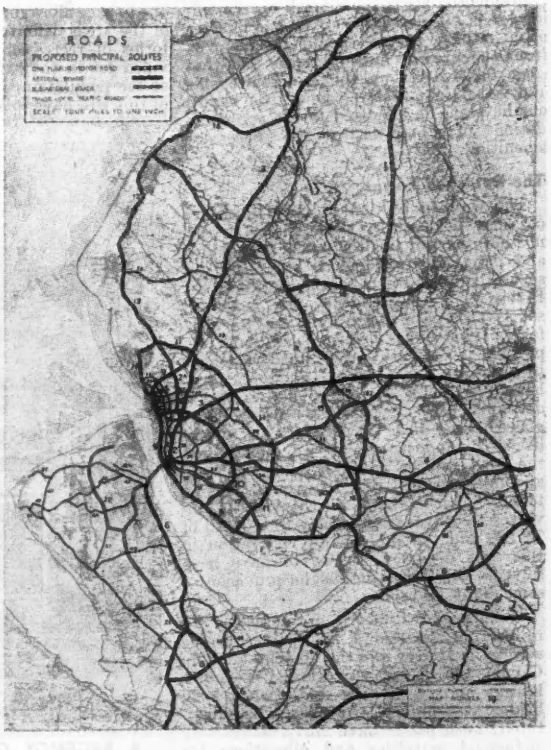
The Advisory Committee resolved itself into five sub-committees for the consideration of the main aspects of the problem under the headings of Industry, Residential Development, Communications, General Amenities and Extractive Operations. The outline plan is based upon the investigations made and the conclusions reached by these sub-committees and approved by the full committee, but they do not appear under these headings in the report, having been rearranged in the sections which will be followed in this summary.

The Nature of the Present Problem.

The essential features of Merseyside comprise a central compact group of towns that have grown up around the Port of Liverpool and are primarily dependent upon it; they are closely bound together by the River Mersey which, though it divides them into two distinct parts, is less of a barrier than a link between them. This group, entitled "Central Merseyside," includes Liverpool, Bootle, Crosby, Litherland and Huyton in Lancashire, and Birkenhead, Wallasey and Bebington on the Cheshire side of the river are dealt with in Part II of the report. Part III is devoted to the consideration of the detached residential towns outside the central area; the more important being Southport, Formby and Hoylake, and to the separate industrial towns, including St. Helens, Widnes, Runcorn and Ellesmere Port. The objective of Part IV is the rural area surrounding Central Merseyside, with Ormskirk as the market town



MERSEYSIDE: PRINCIPAL EXISTING FEATURES.



MERSEYSIDE: PROPOSED PRINCIPAL ROUTES.

for the northern portion. Three other sections deal with Communications, Services and Amenities.

Central Merseyside.

Liverpool ranks as the second port in the United Kingdom, the value of its trade being more than half that of London and three times that of any other city, its trade has not increased much during the last 30 years, in part due to the ship canal which has made Mancheser the fifth port in the country. While no immediate expansion in trade is anticipated, it is regarded as improvident not to allow for a possible extension of the dock system landward, and it is definitely necessary to extend the landwork strip of the port area to provide more space for roadways, railway sidings and warehousing by the removal of premises to a large extent obsolete and many badly damaged.

The central industries are: (1) Those connected with ships and port requirements; (2) those working up imported raw material; (3) making containers, casks, etc., ancillary to (2); (4) shops, distribution and general public services; (5) trades general to this country but under rather than over represented in this area owing to the claims of other activities. The investigations by the University have shown that the high proportion of the industries connected with shipping activities and the preponderance of unskilled labour leads to frequent unemployment; in 1939 nearly 100,000 men and women and juveniles were out of work. The almost inevitable fluctuations of foreign trade demand "balancing" industries such as those manufacturing for everyday home consumption, and provision is made for the establishment of these. There are a number of "noxious" industries carried on in the area, most of them not unsuitably placed; sites are envisaged in the "Special Industrial" areas for any that may be added.

Residential areas show much overcrowding; it is estimated that over one quarter of a million people should be removed from the present built-up areas and that some 8,000 acres on the Lancashire side and 5,000 in Cheshire should, as shown on the plan, be allocated to the accommodation of these with the necessary amenities.

The Detached Towns.

The western portion of the Lancashire coalfield lies within the region; in the northern part of this the seams are shallow and practically exhausted, but there are several pits working to the south of St. Helens and the tendency is to extend southwards until the coal becomes too deep for working under present conditions; expansion is not anticipated, but the danger to buildings and services from subsidence has to be dealt with in planning future developments. The presence of sand for glass-making near St. Helens has established this industry there; when excavated the land can be restored to agriculture, and it is assumed that this course will be taken. Brickmaking in the district involves the excavation of clay to a depth of 70 ft., and the problem of restoration in this case does not appear to have been solved. St. Helens needs the provision of some light industries.

Widnes and Runcorn are joined by a railway bridge and a transporter bridge across the Mersey and the Manchester Ship Canal; the latter is regarded as obsolescent and it is suggested that a road bridge at a higher level should be substituted; both places have fairly satisfactory industrial activities and allocations for further growth and the desirable amenities are indicated. Ellesmere Port has grown up rapidly and is still expanding; liberal provisions for both industry and housing are made in this case.

The larger residential towns very naturally range themselves along the sea coast with the attractions this offers and the view towards North Wales. It is anticipated that Southport with its foreshore of sand dunes will occupy some six miles of sea frontage, and south of this after an open space of 1½ miles is the 2-mile front of Formby. The end of the Wirral peninsula provides the sea front for Wallasey and Hoylake, with West Kirby, Heswall and Neston on the Dee estuary; all these are popular residential suburbs of Liverpool and demand skilled attention as regards development and amenities. The Wirral, it is indicated, should have an improved organisation for its railway services and offers suitable positions for holiday camps, for the design of which instructions are laid down together with a typical sketch by Mr. C. H. James.

Ormskirk, Burscough and Prescot are recognised market centres for the agricultural areas around them, and though they have a few local industries this main function is to be recognised with the replanning required taking this view of their function. Ormskirk has an individuality which, both in its own interests and that of Merseyside as a whole, should be preserved; one main street has a number of admirable examples of Georgian architecture, and this might well be taken as a guide for the character of the central portion.

The Rural Area.

Emphasis is laid on the large proportion of the area possessing a high agricultural value and the importance of preserving this for cultivation; only medium quality land might, in some cases, be released for other purposes, a genuinely rural "background" being a valuable feature in the open space allowance, reinforcing the effect of the areas definitely provided for various forms of recreation. The latter are provided for in the ratio of 7 acres per 1,000 of the population, though, of course, some of this will have to be at a distance, though not a too inconvenient one, from the more densely occupied centres. The large parks of Knowsley and Croxteth, occupied by Lord Derby and Lord Sefton, are, of course, indicated for reservation as of great importance as part of the rural wedges between Liverpool's suburban spurs. The extensive coastal sand dunes provide a large proportion of the requisite space.

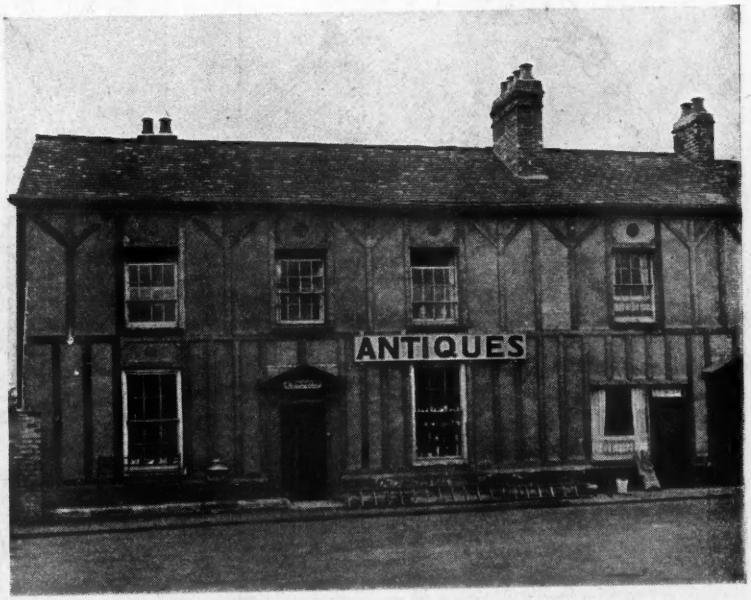
Communications.

Main roads are divided into three classes —arterial roads, sub-arterial roads and major local traffic roads. The complete classification includes also, "one-purpose" motor roads and local roads at the two ends of the scale. A line for one of the national "one-purpose" roads runs just to the east of the area, and local roads are rather more matters of detail. The scheme, therefore, concentrates on the three mentioned above. The first is given a width of 120 ft., with a reservation of a further 100 to be taken up only if found necessary; the second also 120 ft. reduced to 100 ft. in built-up areas; the third 80 ft.; the first two would have central strips and cycle tracks where practicable. The recognised provisions for making road schemes as safe as practicable are described. Measures for the improvement of railway communications and for an adequate provision of airports are included in this section.

Services and Amenities.

The remaining two sections of the report deal with the repercussions of the programme on the water supply, drainage and sewerage, and with a valuable contribution from Mr. C. H. James on the preservation of urban and rural amenities, with particular reference to siting and appropriate design; it also appeals for the studied preservation of all buildings of historical and architectural importance. Finally comes the advocacy of a Joint Executive Committee to implement the scheme and control the details of its development. The appendices afford useful supplementary information.

[Mr. Longstreth Thompson described his plan in an address to the Town Planning Institute on March 1.]



A REGENCY GROUP, STRATFORD-UPON-AVON, BEFORE RESTORATION.
(SEE FACING PAGE).

DETAIL VIEW OF ONE END OF THE GROUP.

RESTORATION OF A REGENCY GROUP, STRATFORD-UPON-AVON

FRANCIS W. B. YORKE, F.R.I.B.A., ARCHITECT.

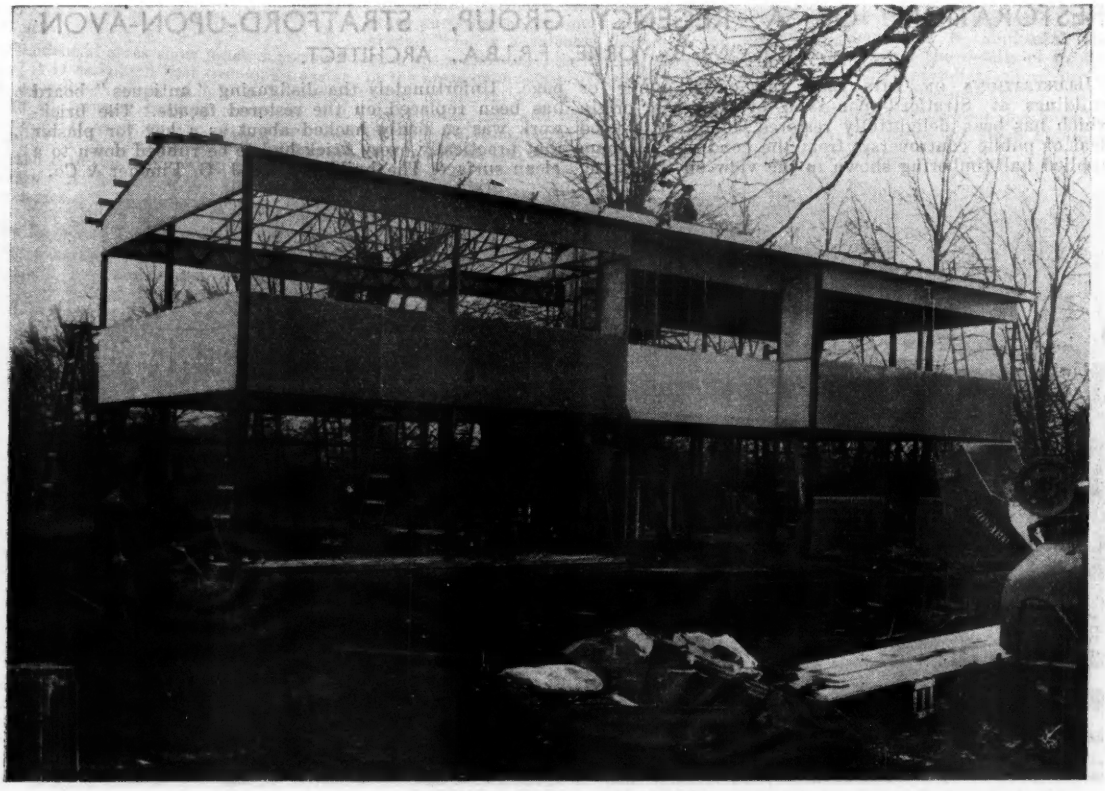
ILLUSTRATIONS ON THIS PAGE ARE OF A GROUP OF buildings at Stratford-upon-Avon of Regency origin which has been delightfully restored, following a good deal of public controversy, from the condition of sham applied half-timbering shown in the view on the facing page. Unfortunately the disfiguring "antiques" board has been replaced on the restored façade. The brickwork was so badly hacked about as a key for plaster that practically every brick had to be rubbed down to a clean surface. The builders were J. G. Fincher & Co.

VIEW OF THE GROUP AS RESTORED.

GENERAL VIEW OF PAIR OF HOUSES.

THE HOWARD PREFABRICATED PERMANENT HOUSE

FREDERICK GIBBERD, F.R.I.B.A., A.M.T.P.I., ARCHITECT

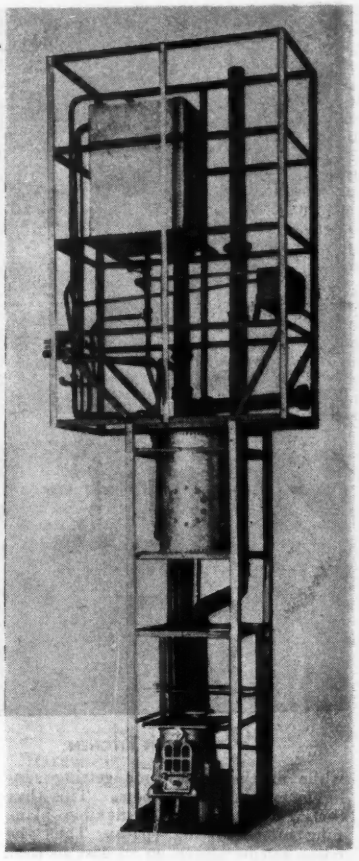


VIEW OF HOUSES UNDER CONSTRUCTION.

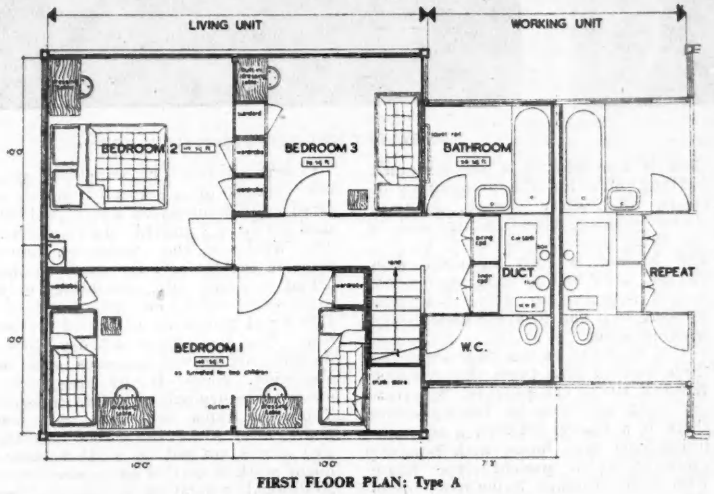
THE HOWARD PREFABRICATED HOUSE

THE HOWARD HOUSE IS A RESPONSE FROM PRIVATE ENTERPRISE TOWARDS THE post-war housing problem. The house has been designed as a permanent structure accurately mass-produced in modern equipped factories. The parts are transported to the site and a house of a standard equal to brick and timber construction is built and ready for occupation in a few days. Research was commenced nearly two years ago by Messrs. John Howard & Co., Ltd., in collaboration with Mr. Frederick Gibberd, F.R.I.B.A., A.M.T.P.I. As there obviously will be a shortage of skilled building labour and certain materials, the house has been designed to eliminate brickwork entirely and to reduce the quantity of timber to a reasonable minimum. It has not been felt desirable to eliminate timber altogether, particularly as a finishing material, as it has a warmth of texture and colour which is essentially domestic in character. Since speed of erection is of fundamental importance in the nation's housing problem, the house has been designed to reduce site hours to a minimum by eliminating wet materials and utilising mechanical plant for erection on a large scale. It is intended to employ extensively the services of local building contractors both for the preparation of sites and erection of the houses throughout the country. Approval has been granted by the Burt Committee to erect a pair of houses. In consequence, the Type A Howard House described in these pages has been erected at Watchet, and can be viewed ready for occupation on application to the firm at Imperial House, Dominion-street, E.C.2. The Type B House is of similar appearance and construction.

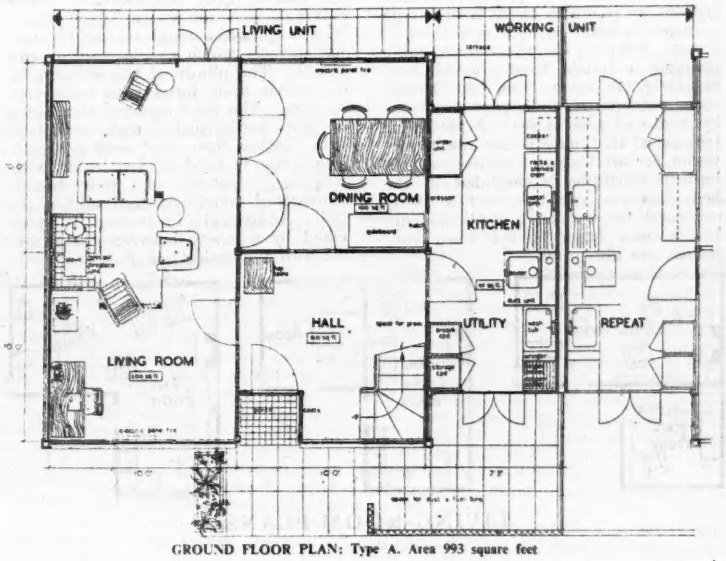
The research work was begun by an examination of the reports made to the Ministry of Health Advisory Committee on House Planning. These reports, coming from such professional bodies as the Royal Institute of British Architects, and also from the housewife herself—through such bodies as the Women's Advisory Housing Council—represent both the view of the expert and the "consumer." While it is obviously impossible to comply with every recommendation—some were conflicting—it was felt that by basing the design on the chief general recommendations a house of reasonably universal appeal could be produced. The resulting house plan is shown here. The working section of the house—the kitchen, bathroom, w.c. and utility room—are all planned as a separate unit from the living and sleeping accommodation. The house offers three distinct types of plan. One bedroom can be furnished and curtained off as two children's rooms; and the third bedroom can form a bed-sitting room. The house can be built in a terrace without the use of tunnel access for tradesmen, and at the same time with the kitchen facing the garden. The houses can be erected in semi-detached pairs or in terraces of any length. In the past the great drawback to the terrace type has been the means of access to the kitchen, which was either by "back lanes" or by tunnels through the houses, neither of which is liked. The service unit of the Howard House, with its screened space in front, allows direct access to be made to the kitchen overlooking the garden at the rear. Tradesmen can call, the dust be collected and the fuel delivered directly from the road ,in front of the house without disturbance to the living quarters. Another very important problem with the standardised house plan is the difficulty of siting it in any position,



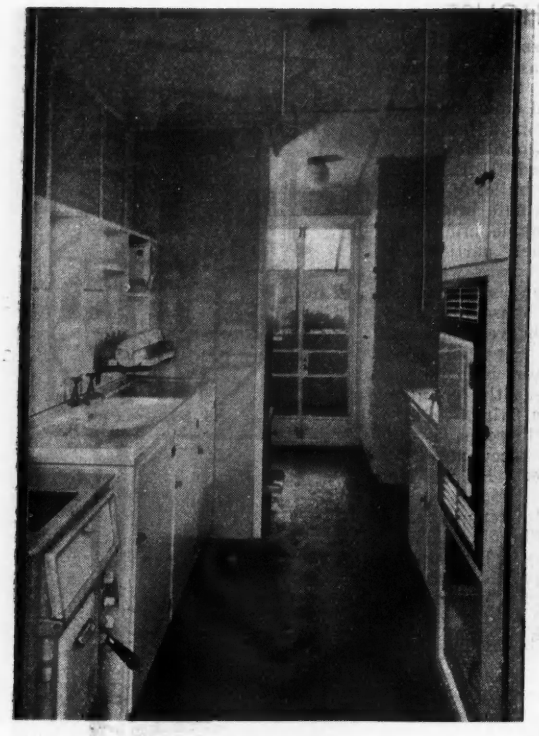
PREFABRICATED SANITARY AND HOT-WATER UNIT.



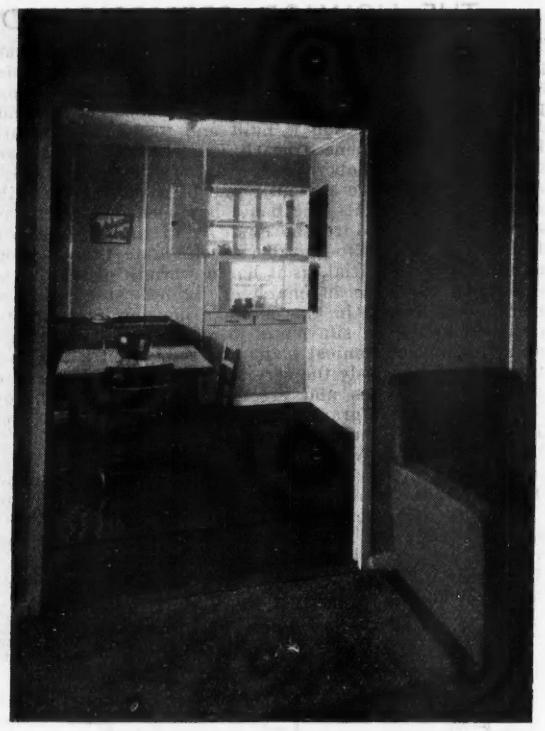
FIRST FLOOR PLAN: Type A



GROUND FLOOR PLAN: Type A. Area 993 square feet



VIEW IN KITCHEN.



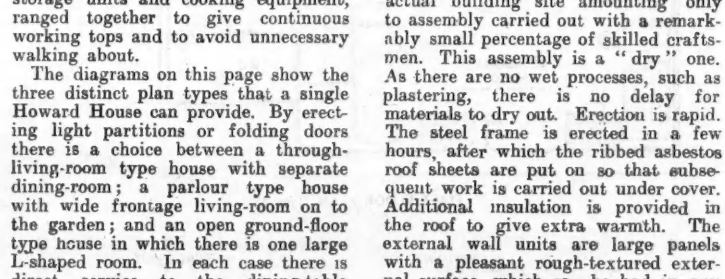
VIEW OF DINING-ROOM, FROM LIVING-ROOM.

while at the same time getting sunlight to the living-room. This has been overcome by the flexible planning of the living space. Thus the house can be placed on an east to west axis with wide living space across the house, facing south, or can be on a north and south axis with a thorough living-room with east and west sun.

Two comparatively new factors in building science, the concentration of services and planning against noise, have had a marked effect on the planning. By concentrating together all the sanitary fittings, the bath, basin, and so on, it is possible to prefabricate the pipe work in a single plumbing duct, reducing the length of the pipe, and, therefore, the cost. Prefabricated plumbing systems are, therefore, a feature of up-to-date contemporary house-planning. Most recommendations for sanitary units suggest that they should be a mechanical core in the heart of the house, but sanitary fittings are noisy, and in the heart of the house they may affect the living-rooms adjacent. This objection has been solved by placing all the noisy rooms—the kitchen, utility room, bath and w.c.—remote from the habitable part of the house. Further, the service units of adjacent houses are placed next to each other so that all the piping for two houses is concentrated together, thereby reducing the drainage and service costs. The front door of the house is protected by a porch and opens into the hall well clear of the staircase. The hall itself is planned as a square, with ample space for coats, a hall-table, and the pram. The doors opening into the living-rooms and kitchen are glazed with obscure glass, giving a feeling of breadth and spaciousness. The kitchen is arranged as a self-contained working unit for the preparation of meals, all "dirty" work, such as clothes-washing, boot-cleaning, and so on, being done in the utility section. The kitchen is fully equipped with storage units and cooking equipment, ranged together to give continuous working tops and to avoid unnecessary walking about.

The diagrams on this page show the three distinct plan types that a single Howard House can provide. By erecting light partitions or folding doors there is a choice between a through-living-room type house with separate dining-room; a parlour type house with wide frontage living-room on to the garden; and an open ground-floor type house in which there is one large L-shaped room. In each case there is direct service to the dining-table through a hatch from the kitchen. Similarly, in each case, the living-room extends on to a garden terrace by means of glass doors. A particular feature of the house is the ample provision for all forms of cupboards. A built-in wardrobe is provided in the bedrooms for each person; a store-cupboard for trunks, a medicine cupboard, and large heated linen cupboards are also provided.

CONSTRUCTION.—The structural system consists of a series of prefabricated units mounted on a light welded steel frame of standard rolled sections. The whole of the fabrication takes place in the factory, the work on the actual building site amounting only to assembly carried out with a remarkably small percentage of skilled craftsmen. This assembly is a "dry" one. As there are no wet processes, such as plastering, there is no delay for materials to dry out. Erection is rapid. The steel frame is erected in a few hours, after which the ribbed asbestos roof sheets are put on so that subsequent work is carried out under cover. Additional insulation is provided in the roof to give extra warmth. The external wall units are large panels with a pleasant rough-textured external surface, which can be had in any colour. The plinth of the building is of precast units faced with briquettes or tiles. The floor consists of a series of deep prefabricated units complete with timber floor and ceiling finish. The house is lined on the inside with laminated panels of fibre board, cementated wood-wool and aluminium foil. Additional insulation is provided by a cavity between the external wall and inside lining.



LIVING-ROOM PLANS

THE HOWARD PREFABRICATED PERMANENT HOUSE.

THE GUARANTEED HOUSE

A NEW SCHEME OF CERTIFICATION.

We cannot, we think, now be accused of an undue optimism if we consider that we are rapidly emerging from a state of war to one of peace, and therefore though a severe struggle may still lie ahead, it is not unreasonable to consider the problems which peace will bring. As to the nature of those problems and the solution of them, there are, it is obvious, very many opinions, but on the paramount importance of one all are united. The need for "Housing" is urgent and vital, and it will be still more urgent and still more vital when the troops are demobilised and the workers return from the ordnance factories. That a very great deal of such "Housing" will be provided either directly or indirectly by the State is obvious, but it is in the highest degree improbable that public bodies can in any reasonable period fulfil the whole of the need. Unless the whole basis of our political and economic system is changed, a part and, perhaps, the major part will have to be provided by private enterprise, as in the past.

Apart from all ideological prejudices or beliefs, there is one important respect in which public building and private building differ—or, shall we say, have differed. That difference is as regards quality. Whatever objections have been raised in the past as regards publicly provided houses, it has always been admitted that the quality was sound. With regard to private speculative house building the position, unfortunately, has been very different.

In the years between the wars, to go back no further, we have been cursed by the erection of an enormous number of shoddy, badly built houses, involving heavy losses to the unfortunate buyers. The position was the more serious on account of the growth of the building society movement, by means of which thousands who in the past would have rented a house have bought one, and so become responsible for all its dilapidations.

A future of further shoddy building and hence of potential slums, could not be envisaged by any thoughtful and responsible person without dismay.

It is not surprising, therefore, that an effort should be made to forestall this dire possibility. In 1937 a body was formed, under the ægis of the late Sir Kingsley Wood, entitled the National House-Builders' Registration Council. It is now announced that another organisation, the House Builders' Association of Great Britain, proposes to set up a Housing Standards Certifying Council. The theoretical object of both bodies is the same—viz., to protect the purchaser of house property against being victimised by buying a jerry-built house, and the method is also on most lines the same—viz., the issuing of a standard specification, a written guarantee, and the right of appeal on the part of the purchaser, if he considers that the builder has not treated him fairly, to the general council of the Association.

On the face of it, it would not appear to be necessary to have two competing associations. We have what we may call the prospectuses of both bodies in front of us, and it will be interesting and, we think, valuable to examine them side by side. Firstly, the controlling body or council. On the Council of the National House-Builders' Registration Council we have represented the Royal Institute of British Architects, the Chartered Surveyors' Institution, the Building Societies' Association, the National Federation of Building Trades' Employers, the National Federation of Building Trades' Operatives, the National Federation of Owner-Occupiers and Owner-Residents' Association, the Council for the Preservation of Rural England, the Housing Improvement Association, the Town Planning Institute, the Society of Medical Officers of Health, various women's organisations, county urban and rural councils, and observers for the Ministry of Health and the Ministry of Works.

The House Builders' Association of Great Britain proposes for its controlling body very much the same list, but with three significant omissions. No representation is suggested of the purchasers, of the Council for the Preservation of Rural England, nor of any women's association, in spite of the obvious fact that women are, and must always be, vitally interested in housing conditions.

The guarantee is much the same in both cases, but with one important difference. The value of a guarantee and the possibility of enforcing it depends, as is well known, on the completeness and clearness of the specification on which it is based. If such specification is vague, lacking in detail, and in any way open to various interpretations, enforcement of a guarantee is virtually impossible, and it is not worth the paper it is written on. When we study the specification issued by both bodies, we note at once an astonishing difference. That issued by the National House-Builders' Registration Council is a clear, concise and detailed document. It prescribes the mixture both for concrete and mortar, the width of the concrete foundations, the quality of hard-core, the mix for lintels, steps and pavings, the quality of drain pipes and bricks, the specification of the damp course, tiled and slate roofs, and the quality and size of timber. Similar details are given for the other trades.

It contains 36 pages and 155 clauses. It is, in fact, a specification from which a quantity surveyor could take off a bill of quantities; many bills have been taken off from far worse.

It can confidently be stated that houses built to this specification would be perfectly good houses. We do not say that they could not be better, but a better specification would go into the luxury class, and the majority of people in the past could not afford luxury houses, and still fewer will be able to do so in the future. The national need, moreover, is not for luxury houses, but good, plain houses.

Let us now look at the proposed specification of the House Builders' Association of Great Britain. It consists of one sheet of foolscap. It gives no particulars of mix or constitution of concrete or mortar; the bricks are to be of a quality suitable for the purpose and laid in good mortar; the timber is to be of sufficient strength or of a quality suitable for its purpose. For the rest, steel joists, steel rods, plywood, copper pipes, manhole covers and frames, cement, roofing tiles, lead pipes and traps are to comply with B.S. specifications. This is fairly safe, as for some time at least after the war, considering the large market which there will be for public works, it will probably be difficult to get any others. One does not see foreign bricks, cement or steel being imported from a devastated Europe. As for gas pipes and fittings, these are to comply with standard specification of the Institution of Gas Engineers, electrical materials are to be in accordance with the regulations of the Institution of Electrical Engineers, and water pipes must comply with the bye-laws of the Minister of Health.

Now, this is not a specification at all in any real sense of the term It would be quite impossible to construct a house from it without further and detailed particulars; such detailed particulars are, presumably, to be provided by the builder, who remains the sole judge of what is "suitable" or "good."

If it be replied that an aggrieved buyer can appeal under the guarantee to the Council, there will still remain the definition of the words "suitable" and "good," which the Council might very easily discover were being interpreted in different ways by different members of the Association.

As in all probability the definition would have to be made sooner or later, it would surely be more inspiring of trust if it were done before the house is built.

If the specification of the National House-Builders' Registration Council is not good enough for the House Builders' Association of Great Britain, they should produce a better. If it is too good, then intending house purchasers will know where they are, bearing in mind more particularly that this specification is not a maximum, but a minimum for good houses.

Times have changed, and the public consciousness and knowledge with them. The housing of the people is too important for the health and the security of the State to be left any longer to chance. For this reason we welcome the efforts of the National House-Builders' Registration Council. We are not doubting, of course, that the House Builders' Association of Great Britain can build equally well, but why should they hide their light under a bushel, or perhaps it would be more accurate to say, "a scrap of paper"?

HALEWOOD

Halewood, towards the southern end of the Rural District of Whiston, which extends along the whole eastern boundary of Liverpool, lies between this city on the west and Widnes on the east, at a short distance from the north bank of the Mersey. In view of the density of the population in Liverpool and its consequent tendency to overflow into the surrounding areas and become an agglomeration too large for sound living, the Whiston R.D.C. has decided that open wedges shall be preserved by the prohibition of building, which will be permitted only on three "tentacles" reaching out from Liverpool to Halewood in the south, Rainhill in the centre, and Kirkby at the northern extremity of the district.

As part of this programme a pamphlet just issued* deals with the development as a community centre of about 1,000 acres of land, to the south of the present village, which is intended to accommodate an ultimate population of some 20,000. The site is crossed by two main railway lines, and between these lies nearly two-thirds of the total area, served by a highway along which there is already a good deal of ribbon development. This portion is allocated to housing, arranged around parks and gardens, and provided with such communal buildings as schools, places of worship, library, community hall, etc.; a football ground is suggested a little to the east of the housing. A small housing group is placed to the north of the railway station between this and the existing village, where ten acres have been given as a public recreation ground. The area to the south of the railways extending to a proposed arterial road from Liverpool to Widnes is intended solely for industrial occupation. All the surrounding land is defined as agricultural, except to the west, where it links up with the Speke district of Liverpool. The planning seems to be well considered and attractive. H. V. L.

* Design for the New Community Town of Halewood. Published by Whiston Rural District Council.

SHORT-TERM HOUSING PLANS

MR. WILLINK'S REVIEW.

THE statement that the Government is aiming at providing 100,000 temporary houses this year was made by the Minister of Health, MR. WILLINK, addressing the conference of the National Housing and Town Planning Council on March 2. In the field of housing, said the Minister, we had frequently talked of the two-year period after the defeat of Germany. We were now almost in the position when we could regard that two-year period as from now, and say we were facing our immediate task during the forthcoming weeks and months. "I believe in seriously facing the facts. It is essential in a matter of this importance that projects should not be based on false premises. It must not be overlooked that there will have been an almost complete interruption of house building for six years when we start again. No one seriously challenges the statement that if every family is to have a separate home—and every family should—we need a million more than we have. That figure is arrived at by this calculation: that, compared with 1939, we shall have, in 1945, 850,000 more family units wanting separate homes. We have also had 200,000 houses totally destroyed by the enemy. There are, on a modest computation, at least 100,000 slum houses. Against that total of 1,150,000 houses we can only set 150,000 houses built or completed since the outbreak of war.

"As long ago as June of last year, before the flying bomb and other attacks, there were heavy arrears of unrepaired war damage. These were not distributed evenly over the country, a fact which creates difficulty. Since then the flying-bomb attacks in Greater London and South-Eastern England have increased immensely that burden of war damage. Taking the damage up to September alone, and leaving on one side very slight damage, and on the other damage so severe that it could not be tackled in the winter months, there were 719,000 houses to be repaired of those damaged up to that date. Since that date, much new damage has been caused to houses in South-Eastern England. As against a building industry one million strong in 1939, we have an industry to-day of 337,000 men. Beyond doubt a large proportion of that immensely reduced building force must now, and for some time ahead, be used, if it is to be most effectively used, to increase the number of habitable houses damaged by bombs."

We hoped that at the end of twelve months after the war against Germany the building industry would have risen to 800,000 men, as the result of demobilisation, the special release of men needed for this most urgent of reconstruction work, and by the training of apprentices. But though that would be a very great achievement, let us mark that it meant this: that the average number of operatives over those twelve months would be in the region of 500,000, only half the pre-war building industry, and at a time when the industry was shaping itself anew after war-time dislocation. It must also be borne in mind that in 1939 about 300,000 men were engaged on ordinary repairs and maintenance, and we all knew what arrears of maintenance and repairs had accumulated to-day.

"What is the Government's intention and target? In spite of these new blows we have never shifted since our target was first announced. It is that in those first two years we should see to it that 300,000 houses of permanent, good type and character should be built or in course of building. What matters to those who will be returning home is the number of houses built. We place the utmost importance on bringing into operation as soon as possible private enterprise building. We realise fully the immense contribution that private enterprise made between the wars; the economic effect on prices of the introduction of private enterprise; and that private enterprise owns sites, in many cases developed. There will be very many coming back from the war who will want to own their own houses. Another factor will be the conversion of existing houses, an operation that may well form an important part of schemes in our large cities. I have appointed a special sub-committee to look into this question. Then there is the reconditioning of rural cottages. Only this week I promised in the House that legislation would be introduced this session to amend the law and make further reconditioning possible."

The "Duplex" Idea.

Regarding local authority housing, he believed local authorities would do well to consider one idea—it was an idea and not a design—which was mentioned in the Housing Manual and which had become known as the "Duplex" idea. Local authorities might think it right—it would be for them to decide—to accept this plan of a temporary division of what would be in essence a permanent house of good standard. The Minister of Works and he (the speaker) were considering further suggestions of how that idea could be adopted, which would be issued to local authorities.

As regarded preparations for permanent houses, 24,500 acres had been acquired by local authorities, available for 240,000 houses; layout plans had been prepared for 90,000 houses, of which 78,000 had been approved by his Department. Apart from sites already developed, contracts had been placed for roads and sewers covering 45,000 houses. "So far as actual building is concerned, we have only been able to make a start, so small as hardly to deserve the name. It has been confined to a few bomb-destroyed houses only, where labour happens to be available and where the cost is under £1,500. I cannot say more at this double peak of the war than that the Government hope to enable the resumption of permanent house-building on a limited scale during 1945."

The principle behind the temporary house programme was the need of producing homes with all possible speed coupled with the maximum use of labour not normally used on housing. It was the Government's firm intention to deliver to local authorities temporary houses up to the number that had been allocated—something over 100,000 in England and Wales—and as quickly as possible. The rate of delivery had been increased by the 30,000, for the promise of which we were so grateful to our American ally. He had asked local authorities to give special attention to the acquisition of sites for these temporary houses. So far, sites for 60,000 temporary houses had been submitted to the Ministry of Health, and 46,000 had been approved, but only about 4,000 were at a stage in which they could be handed over to the Ministry of Works to do their part of the job. He was asking local authorities to get every undeveloped site to the stage of tender not later than April so that they might be ready to take advantage of the summer.

"It is clear (concluded the speaker) that if by the application of new methods a programme wholly consisting of permanent houses would be so brought forward as to make it unnecessary to extend the temporary house programme beyond a year, this would be universally welcomed. The Minister of Works is throwing his great energy into this part of the undertaking in close collaboration with myself. At his request I have invited the local authority associations to appoint a technical committee which will be at the disposal of Mr. Sandys so that he may have the benefit of local authority experience. He has reached the stage where he will very shortly be carrying out some forms of experimental work, and doing this in a number of cases in close association with local authorities."

MUNICIPAL HOUSING

ACQUISITION OF THE SITES OF WAR-DAMAGED PROPERTIES.

IN a circular (34/45) the Minister of Health draws the attention of housing authorities to Section 61 and the Eighth Schedule of the Town and Country Planning Act, 1944. These provide that where a hereditament which has suffered war damage is acquired *compulsorily* for public purposes, whether by itself or in conjunction with other land, the compensation payable on acquisition (apart from any compensation for injurious affection or disturbance) is, subject to the provisions of the Schedule, to be the after-damage value of the land as certified by the War Damage Commission, or that value as adjusted to take account of any material differences in the state of the property or in incumbrances, as defined in the War Damage Act, which have taken place since the occurrence of the war damage. This will apply whether the war damage payment has been classified as a value payment or a cost of works payment, unless in the latter case the war damage has been wholly made good, since by virtue of Section 14 of the War Damage Act, 1943, the service of a notice to treat converts a cost of works payment into a value payment in respect of any damage which has not then been made good.

In order to secure expedition in completing the acquisition of such land for housing, it is clearly important that action should be taken to determine the after-damage value as early as possible. Local authorities, therefore, proposing to acquire the sites of war-damaged properties for housing, whether by authorisation under Section 6 of the Housing (Temporary Accommodation) Act, 1944, or by Compulsory Purchase Order, are asked to approach the Regional Manager of the War Damage Commission at the earliest possible stage in order that the steps required to supply any necessary certificate of after-damage value may be taken. They should ascertain the kind of war damage payment and, as required by Section 53 of the Town and Country Planning Act, should notify the date of service of the notice to treat to the Regional Manager. They should apprise the District Valuer of any information they give to or receive from the Regional Manager.

Section 61 and the Eighth Schedule of the Town and Country Planning Act are not concerned with land acquired *otherwise than compulsorily*. But clearly information as to the kind of war damage payment is material to the District Valuer for the purposes of his report on or negotiations for war-damaged property. In these cases also, therefore, where local authorities propose to acquire housing sites by agreement they should ascertain this information from the Regional Manager of the War Damage Commission and communicate it to the District Valuer.

HOUSING IN THE NORTH

THE North Eastern Housing Association, building for local authorities in the county of Durham and adjacent areas, has erected 8,155 houses during the years 1936-39, and 902 during 1941-44. The report now issued* is in response to a widespread demand for information from those interested in housing as to the methods adopted by the Association, which was formed by the Commissioner for the Special Areas in 1935.

The aim was to assist in the provision of good homes for wage-earners at the minimum possible rentals. Of the two alternatives, a special housing subsidy or a grant through the medium of a housing association (excluding schemes which were already State-aided), the latter was selected and the N.E. Housing Association called into being to operate on behalf of the local authorities so as to provide houses and thus eliminate slums and overcrowding.

The Association builds and manages the houses, receiving from the authorities an annual grant not less than the amount of the Exchequer subsidy, and through the Commissioner a grant not exceeding the rate contribution needed to bring the rent down to an appropriate figure. The type of houses erected is very varied, including one- and two-storey cottages and some blocks of flats. While those illustrated are unequal in architectural merit, they appear well arranged in the general site planning and the internal equipment. Gardens are popular, and have been encouraged by means of skilled advice, lectures and prizes.

Tenants had often hardly any decent furniture, bedding fit only for the incinerator, and other things infested with vermin. The Association, therefore, instituted at Sunderland and Gateshead a hire-purchase furniture scheme on a three-years basis. It is considered that such a scheme on a large scale will be urgently needed after the war.

The average rent for the three-bedroomed house built before 1939 was only 6s. 6d. per week, and that of a one-bedroom type for old people and pensioners was as low as from 2s. 2d. to 3s. 5d. It is not regarded as possible that such rents will be applicable to future buildings, but experiments are being made in economic methods of construction, in addition to others aimed at simplifying labour in running the home, such as district heating and the increased use of electricity. The planning of the kitchen and utility room has received particular attention.

COMPETITION NEWS

Public Hall, Ashington.

ASHINGTON U.D.C. is to hold a competition in connection with the preparation of plans for a new public hall to be built in Green-lane as a memorial.

National Allotments Society Competition.

In connection with the above competition, we are asked to point out that the winning design, which was illustrated in our last issue, was the joint work of Mr. Wells and Mr. A. Taylor, architect, and was submitted as such, as will be seen from the plan. The award was printed as received from the promoters.

* The North Eastern Housing Association, Metrovick House, Northumberland-road, Newcastle-upon-Tyne. Report 1935-1944.

MR. S. F. S. HEARDER, the New Director N.F.B.T.E.

CONCRETE MAKING

NOT all the problems of concrete making—the cementing materials, the aggregates, and their combination—are solved. Though much has been achieved by research and testing work in the years between the wars, much is still to be done, though it must be recorded that certain rules and regulations have been most useful in avoiding deficiencies which caused more or less dangerous failures in the past.

Every user of concrete should know not only the strong but also the weak points of the material in order to find the best way of tackling those difficulties arising from still unsolved problems—*e.g.*, in making and placing concrete, all those responsible for a design and its construction should know which properties of the cement to be used are of special importance in one and harmful in another case; which type of aggregate is to be applied in one case and refused in another, etc.

Mr. Chate explains in the preface to his book* that he wanted to present the scientific principles which underlie the practical art of concrete making in a form that can be readily assimilated and applied in everyday practice. Accordingly the author does not include the calculation of dimensions or design problems, and only uses structural elements as illustrations in describing some properties of reinforced concrete. Thus, the contents of the three chapters are: 1. The concrete, including the measurements of its properties. 2. The principles of concrete making, with a description of the different kinds of cementing materials, of the aggregates and their properties, hints on the mixing, the moulding, the transporting and the consolidating, not forgetting the treatment of the hardening concrete. 3. The reinforcement. Appendix 1 gives a list of the standard methods of tests, and Appendix 2 a bibliography.

The author has given the publication the form of a notebook, written primarily from the structural standpoint. It is a timely manual for the office and for the building site, and at the same time useful to all who are engaged in the manufacture and use of concrete in any form.

E. PROBST.

* THE PRINCIPLES OF CONCRETE MAKING AND ITS REINFORCEMENT. Technical Paper No. 3. Compiled and edited by E. V. CHATE, A.M.Inst.C.E., M.I. Struct.Eng., Secretary of the Reinforced Concrete Association. Price 2s. 6d.

BUILDERS' NEW DIRECTOR

As we announced briefly last week, Mr. S. F. S. Hearder, Principal Assistant Secretary to the Ministry of Health, has been appointed Director of the National Federation of Building Trades Employers in succession to Sir Jonah Walker-Smith, M.P. He will take up his new duties on April 3, though it is understood that he will continue temporarily some of his work on London bomb damage repairs.

During recent months, Mr. Hearder has been chief of staff to Sir Malcolm Trustram Eve, Chairman of the War Damage Commission, in connection with bomb damage repairs in London, and for three months before Sir Malcolm took it over was in complete charge of this work.

Mr. Hearder entered the Civil Service as a boy clerk in 1909, and three years later became a Second Division Clerk in the National Health Insurance Commission. In 1920 he was promoted to the First Division as Assistant Principal, and later served as Assistant Private Secretary to the Minister and Private Secretary to the Parliamentary Secretary. In 1931 he became a Principal in the Housing Division of the Ministry.

In 1934 he acted as Ministry of Health representative on the staff of the Commissioner for Special Areas, and in 1935 became Principal Private Secretary to the Minister, first the late Sir Kingsley Wood, afterwards Col. Walter Elliot.

In 1939 he returned to the Housing Division as Assistant Secretary, and in 1941 became Principal Assistant Secretary in charge of Housing. In that position he was responsible for supervising the work of all committees concerned with housing, and for the administration of priorities for labour and materials for all works in which the Ministry was interested.

Sir Jonah Walker-Smith had been director of the National Federation since 1926. He was previously Director of Housing at the Ministry of Health, and earlier Director of Housing and Town Planning to the then Local Government Board of Scotland. He was at one time City Engineer of Edinburgh. He has been M.P. for Barrow-in-Furness since 1931.

SIR JONAH WALKER-SMITH, M.P., retiring Director of the National Federation. A Cartoon by Sallon.

In welcoming the new director, we should wish to pay tribute to Sir Jonah Walker-Smith, who has guided the destinies of the National Federation for nearly 20 years. His experience in civil engineering, municipal engineering in central Government (both in the Ministry of Health and the Local Government Board of Scotland), and as a barrister-at-law and a Member of Parliament, is in sum probably unique. These qualifications have served the Federation well during the difficult years between the wars, especially his experience as Director of Housing at the Ministry of Health. He is 70.

CORRESPONDENCE

[Whilst we are glad to publish letters on professional and other matters of interest to our readers, it must be understood that we do not necessarily endorse the remarks of correspondents, who will oblige us if they will express their views as briefly as possible.]

Artists' General Benevolent Institution.

To the Editor of *The Builder*.

Sir,—As a Steward for this year on behalf of the artists I ask you for your help for this most urgent cause—our own cause—and I ask it the more urgently after five long years of war.

The artist is not one of those upon whose efforts war makes an instant call, thus providing him with work. For him, in most cases, it does but remove the possibility of work, and for many fellow artists and their families the position is now disastrous.

As a nation, for five years our firm faith has supported us, but now that hope shines so steadily on the horizon I ask for your charity—and a little private thanksgiving for our present hope.

Hopefully, therefore, I beg of you to send me as much as, and more than, you can spare, for this, our own charity.

Philip Hepworth.

P.S.—Will you kindly make your cheque payable to me, as all donations are listed in the A.G.B.I. book?

Zoffany House,
65, Strand-on-the-Green, W.4.

Public Staircases.

To the Editor of *The Builder*.

Sir,—Now that the report of the Bethnal Green shelter disaster has been published, and one can carefully study the interesting set of plans attached to the report, it would appear that the great loss of life was entirely due to defective planning of the staircase approach from the street to the underground booking hall.

With perhaps the one exception of wartime dim lighting (and this was subsequently remedied), the conditions as to the safety of persons using this staircase were very similar to those applying to staircases in theatres and other places of public assembly. Yet from the published plans, approval to this staircase approach would never for one moment have been given had it applied to a theatre, and it is surprising that the authorities allowed it to be used without seeing that it complied with general safety practice.

There were, for example, a greater number of steps from landing to landing than are normally allowed; there were no central handrails—this provision being absolutely essential—although the staircase was wide enough to take considerably more than two streams of people abreast; and the triangular landing space at the head of the staircase is of a most dangerous shape, just asking for trouble.

Although it is to be hoped that the need for underground shelter accommodation has now practically ceased, it might be wise, in view of the above, to check up on approaches to other underground shelters.

Digby L. Solomon,
Chairman of the Building Industries National Council's Means of Escape Committee.

London, W.C.1.

Repair of Damaged Buildings.

Two further notes in the repair of damaged buildings series are now available—No. 5, Repairs to Asphalt Mastic and Felt Roofs, and No. 7, Restoration of Paintwork on Steel. Copies of these and other notes may be obtained, free, from the Building Research Station, Garston, Herts.

THE QUARRY AT CAULDON LOWE

M.O.T.C.P. APPROVAL.

In spite of protests by local residents, the Staffordshire County Council, the Council for the Preservation of Rural England, and many other organisations, it was officially announced on March 11 that the Minister of Town and Country Planning, Mr. W. S. Morrison, has given his consent to the application of Messrs. G. & T. Earle, Ltd., to quarry limestone and shale for the manufacture of cement at Cauldon Lowe, in the Cheadle Rural District of Staffordshire. This consent is given subject to the following conditions :

The winning and working of minerals shall take place in accordance with an orderly programme of operations which shall proceed progressively by areas in a sequence approved by the Minister.

The disposal of quarry waste shall be carried out in accordance with plans approved by the Minister.

Trees shall be planted where possible over all quarry waste to the satisfaction of the Minister.

The control of the emission of dust and smoke shall be to the satisfaction of the Minister.

The official statement adds : The Minister has taken into account geological and economic factors as well as questions of amenity. After careful examination he is satisfied that if adequate safeguards are provided, considerations of amenity can be reasonably met. These safeguards should secure that serious injury in the immediate neighbourhood of the site would be reduced to a minimum, and that the Manifold Valley, by reason of its distance from the site and of the intervening high ground, would not be affected.

Since the application was confined to the use of the land for winning and working minerals, the Minister's decision does not grant consent for the erection of buildings or use of machinery in connection with the manufacture of cement. Any proposals for these purposes will require a further application.

A scheme for tree planting and the erection of buildings on this site, prepared by Mr. G. A. Jellicoe, F.R.I.B.A., P.I.L.A., was illustrated in our issue for November 19, 1943.

LANDSCAPE MODELS

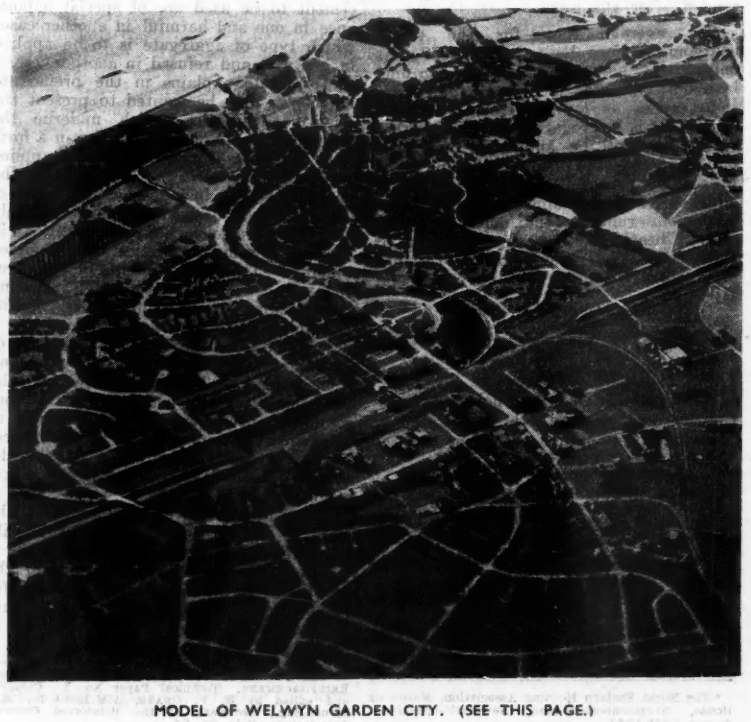
In the normal sense a landscape model means a solid reproduction, probably executed in some form of plaster with buildings in wood. This type of rigid model is costly and heavy, and transport is often difficult, while the size is limited by the height of the doorway of the room in which it is to be set up. A new type of model in relief and colour has come to our attention which is equal in appearance and as accurate as the rigid model. It is the invention of Lt.-Col. D. D. Haskard, of the Defres Studio, Netheravon, Wilts. These models, which are quickly made, are built up in canvas, buildings and vegetation being securely fixed with adhesive. The whole thing can be rolled up and transported without damage. The contouring is done by means of shapes placed under the model. Such models can be either placed on a table or hung on a wall. Details of this method, which has already been used for over 1,500 models for the training of H.M. Forces, can be obtained from Colonel Haskard. A section of a model prepared for Welwyn Garden City is shown on this page.

BOOKS RECEIVED.

Constructional Steelwork Simply Explained. By Dr. Oscar Faber, O.B.E., M.Inst.C.E. (London : Oxford University Press.) Price 6s. net.

Trade Drawing for Junior Technical Schools of Building. By E. G. Warland, M.I.Struct.E. (London : English Universities Press, Ltd.) Price 5s. net.

Homes for All. Broadcast Discussions of B.B.C. (Worcester : Littlebury & Co., Ltd.) Price 7s. 6d. net.



MODEL OF WELWYN GARDEN CITY. (SEE THIS PAGE.)

REPAIR OF BOMB-DAMAGED BUILDINGS

In a paper read to the Institution of Structural Engineers on February 22, Mr. S. B. Hamilton, M.Sc., A.M.Inst.C.E., M.I.Struct.E., of the Building Research Station, dealt with the repair of bomb-damaged buildings. In the course of this he said :—

Buildings of all kinds have been subject to damage by aerial attack within the last few years. Some have been completely destroyed; many more have been slightly damaged and repaired by straightforward building methods; but a number of others have been so seriously damaged as to present a problem in deciding how much of the structure should be rebuilt, and how much could be economically repaired. It is with the latter type of case that this paper will deal, and particularly with the repair of the more frequent form of damage to structures of common type.

In general, the methods of treatment are not novel; and are put forward not with any pretence of ability to tell members of the Institution how the jobs should be done but to stimulate discussion. The methods advocated are those which have been treated at greater length in a series of *Notes on the Repair of Damaged Buildings*, of which the first was issued by the Building Research Station early in 1944.

It is convenient to divide the subject matter according to the principal materials of construction, into repairs to brickwork, masonry and timber; structural steelwork; reinforced concrete; and foundations.

REPAIRS TO BUILDINGS OF BRICK, STONE AND TIMBER CONSTRUCTION.

1. Repairs to Walls.—A brick wall may be cracked, bulged, tilted or moved bodily on a horizontal joint, usually the damp-proof course. Experiments were arranged to compare the relative strength of walls repaired by different methods; but it was found that walls cracked vertically, or diagonally, often retained without repair ample load bearing capacity. The most suitable method of repairing a cracked wall is thus decided by considerations of weather-resistance and appearance; and where cracks are wide or extensive it is often considered more satisfactory to rebuild a wall than to patch it or refill the cracks.

Internal walls, or external walls which will be covered by rough-cast or some other finish, may, however, be satisfactorily repaired by filling cracks with a grout composed of equal parts by weight of cement, sand and water, poured under gravity head with a home-made appliance.

Walls which have tilted, bulged or moved laterally have been shown by tests to have lost supporting power roughly in proportion to the movement. Test results on brickwork should, however, be applied with caution, as actual failures are more complicated than those produced in a testing machine.

Loss of lateral stability is often more serious than reduction of strength, and may be complicated by foundation settlement either of old standing or caused by enemy action. A wall which has moved on its dampcourse so as to overhang its base may be underpinned by thicknessing from the footing up to the overhang. Tilting or bulging can be arrested by building piers or buttresses on the outside of the building; but great care must be taken to secure a foundation that will resist settlement, and to pin the buttress securely where it takes the load from the wall. Alternatively, tie rods may be fixed inside the building, if they can be placed where they are neither obstructive nor unsightly.

The repair of cavity walls presents features of interest. The outer leaf is often shattered by blast when the inner load-bearing leaf is practically undamaged. The behaviour of ties is variable, and depends largely on the quality of the original workmanship. They are sometimes loosened when little damage has been done to either leaf; they are generally loosened if one leaf is badly damaged; but, in well-built cavity panel walls to steel frame buildings, they have been found still firmly bedded in the inner leaf when the outer leaf has been shattered. The state of any accessible ties should be carefully noted when assessing the probable extent of repair which will have to be done.

The junctions of bays to main walls should always be carefully examined. Bonding at such places is often badly done, and cracks are liable to develop under moderate shock.

2. Repairs to Roofs and Floors.—Timber roofs, properly triangulated and tied together, have been lifted off their supports without extensive damage, and have been jacked back into position after repair to broken members and redriving of drawn nails. Many roofs, however, are not securely tied together and depend on their purlins being kept in place by weak corbels and by props from chimney stacks, partitions, etc. Under comparatively mild blast these supports are liable to fail : corbels to crack, props to fall out, and the rafters to thrust outwards at the eaves. In repair, the feet of the rafters should be drawn in as tightly as possible, and new props securely fixed. Under severe blast even a well-braced roof may suffer serious damage. Stiff members, such as purlins may be snapped; more flexible members, such as rafters and ceiling joists tend to develop longitudinal splits, particularly if the grain and the sawn edges are not quite parallel. Such splits may be difficult to detect if battens, boarding, or lathing are still intact. They should be covered by long fish-plates, or duplicate members.

Joints should be carefully examined. Nails are often partly drawn. If still straight they can be redriven, and supplemented by new nails; but bent nails may need to be cut through by an electrically driven grinding wheel, or by a hacksaw, before the separated timbers can be brought together again.

Ceiling joists which meet and overlap over a partition are generally nailed only to the partition head, and the nails are readily drawn if the eaves are thrust outwards. If such movement has taken place or the roof has been severely shaken the overlapping ends of the joists should be nailed together.

Wall plates are often insecurely connected at the corners of a building, and it has become usual to omit the "angle-tie" which should hold the plates together across the corners. If movement at this connection is observed or suspected, it is advisable, in repairs, to rectify this omission.

Floors which have not collapsed are usually repairable even when their supports have partly given way. If the ends of floor joists are damaged, it may be possible to pick up the joists on a steel beam. To save cutting the large holes in party walls which the insertion of a full-length beam would require, a beam of shorter length than the spacing between the walls may be supported, either by cleating it to short beams set diagonally across the corners of the walls, or by bonding piers to the party walls, if the internal arrangements of the building do not make such support intolerably unsightly.

It has been found economical to retain repairable roofs and floors even when considerable rebuilding of walls is needed.

REPAIR TO STRUCTURAL STEEL FRAMEWORK.

Assessment of Damage Done to Connections by High Explosive.—Immediately adjacent to the seat of the damage, members may be cut through, torn from their fastenings, bent and twisted; but elsewhere main members receive only slight damage. Small permanent sets in stanchion and beams can usually be ignored. Even the complete severance of a stanchion in a multi-floor building seldom causes general collapse, as part of its load is usually blown away, and the upper part of the damaged stanchion remains suspended from the adjacent framework of the upper floors. Damage to connections, however, extends far beyond the limits of noticeable damage to main members, and several buildings have been exhaustively surveyed to determine what degree of obvious damage to concrete encasing signifies hidden damage to steelwork connections so severe as to demand repair.

It was found that, if no crack in the casing at the end of a beam exceeded 0.012 in. in width, the connections were virtually undamaged. Where a crack exceeded $\frac{1}{8}$ in. in width, it must be assumed that serious damage had been suffered, and that at least the bolts and rivets would need replacement. Where cracks of widths greater than 0.12 in. in width, but less than $\frac{1}{8}$ in., were found, bolts were certain to have suffered partial shear, bending or stretching as the case might be; but tests to destruction of many distorted bolts taken from such connections showed that an ample margin remained between normal design load and failure load. For instance, several bolts $\frac{3}{4}$ in. diameter with axes displaced 0.3 in. in shear when taken from the job, still required just under 9 tons to bring about failure in shear. Their design loads would be only 1.76 tons. A bolt $\frac{7}{8}$ in. diameter which, when taken from a top cleat was found to have been stretched about $\frac{3}{16}$ in., and also bent, withstood 15.2 tons in tension under test. Its design load would be only 3.38 tons.

Damage to Steelwork by Fire.—Damage to structural steel framework by fire, as is well known, takes two forms : injury to the metal by overheating; and distortion of members and connections by unequal expansion. The temperature of unprotected steelwork may, within a few minutes of the outbreak of fire, reach 50. deg. Cent., at which creep leads to rapid distortion and collapse, especially if a stanchion is involved. The overheating of steelwork encased in concrete, or other fire-resisting material allowed by by-laws, is generally so delayed that dangerous temperatures are only reached in places where large quantities of combustible stores have been consumed.

When the heat is so prolonged and intense that the protective covering is destroyed, and the steel is thus exposed to high temperatures, a change in the

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crystalline state of the metal may take place, and the yield point of the steel be permanently reduced after the steel has cooled. Mild steel of which the yield point has been raised by cold working is reduced by high temperatures to the condition of normal mild steel. Such steel in fire-damaged structures should always be suspected of loss of strength, and samples removed for test.

Long continued heating under certain conditions may lead to burning of steel, with loss of carbon content. This will show in the formation of rusty-red patches, or of scale. Burnt steel should not be allowed to remain in positions where strength is important.

The Repair of Steelwork Damaged by Fire.—Distorted main members, found by test on selected typical samples to have lost little, if any, of their strength by overheating can be treated according to circumstances in one of several ways: straightened *in situ*, straightened at the works and re-erected, or allowed to remain as they are. Severity of damage by expansion will be less marked the farther the steelwork is from the seat of the fire; but stanchions may be pushed out of plumb, and connections distorted, at considerable distances therefrom. It will be convenient to consider repairs in order, on stanchions, beams, connections and filler joist floors.

1. *Stanchions.*—The tilting or bulging of a stanchion will alter the eccentricity of its load, and the effect of this should be investigated. A slight bulge in the direction to the minor axis of the section could often be corrected by straightening *in situ*. The stiffness of a stanchion in the direction normal to the major axis of the section is usually too great for straightening *in situ* to be practicable. If a distortion which cannot be corrected *in situ* is not intolerable from considerations of strength, its unsightliness can be overcome when renewing the protective casing.

If loss of carrying capacity must be made good, this could often be done by welding additional plates or angles on to the original section. If damage is too severe for such treatment, one of the following methods may prove suitable:—

(*a*) Relieve the damaged column of its load by shoring; cut out the damaged length; jack up the beams formerly carried by the stanchion to their correct level; cut a new piece of stanchion exactly to fill the gap from which the old piece was taken; weld or splice the new piece to the existing stanchion above and below.

(*b*) Enclose the damaged stanchion in a reinforced concrete column cast around it.

(*c*) Erect secondary stanchions at convenient points under the beams which load the stanchion.

2. *Beams.*—Beams suffer more than stanchions from the direct effects of fire; but less from the effect of expansion. The unsightliness of a slight sag, say not more than 1 in. to each foot of span could usually be corrected when renewing the encasement. More serious sags could often be corrected by removal and straightening at the work.

3. *Connections.*—Starting from the seat of the fire, and working outwards, connections encased in cracked or discoloured concrete should be examined until it is clear that the whole zone of damage has been covered. Brackets and cleats which have been badly torn or severely bent may have to be replaced; but much laborious shoring and stripping may be saved if slightly damaged connections are strengthened *in situ* by welding. Some engineers are prepared to allow the welding to take care of live and future dead load; others consider that the welding should be adequate for the whole reaction. The difference in labour and material is usually small, and the second alternative is probably the sounder.

Bolts often project far into protective casing, have only slight cover, and suffer more than rivets or rolled sections from exposure to fire. All bolts and rivets which have been strongly heated should be examined; and, if judged to be damaged, replaced, one at a time, by new bolts.

4. *Filler Joist Floors.*—The first signs of damage to a filler joist floor will be the spalling of the cover to the soffits of the filler joists. If this is the extent of the damage, the cover can be replaced by rendering, with a steel lathing mesh well tucked and pointed into chases cut behind the bottom flanges of the filler joists.

If the soffit concrete of the slab between the joists has also spalled or softened, this should be cut away, the mesh extended over the whole area to be renewed and clipped to the filler joists. If the depth to be replaced is more than, say, ¾ in., it would be well to consider the use of the cement gun instead of a plastered-on rendering.

REPAIR OF REINFORCED CONCRETE STRUCTURES.

Repair to Reinforced Concrete Structures Damaged by High Explosive.—1. *Columns.*—In a well-designed, soundly constructed, monolithic framed structure, the effect of explosion dies away rapidly with distance from the point of attack. Between the inner zone of destruction and the outer zone of only trivial damage lies an area within which major repair will be needed. Columns may be partially collapsed by sudden overloading, cracked by sideways bending, or stretched by the effect of blast between two floors.

Sudden overloading may damage the adjacent beams as well as the column, requiring replacement of damaged members. Sideways bending will generally crack the column across at several places, making it necessary to cut out some shattered concrete, straighten and splice or weld the longitudinal rods, and recast the concrete where it has been broken or cut away, and provide new hooping. In severe cases the whole of the concrete and hooping may have to be replaced. If this is the case, the concreting should be done in two stages, a short length at the top being left open until the lower part has shrunk. Stretching will usually take place at the head or foot of a column. Again, shattered or loosened concrete must be cut away, steel straightened, and if need be cut and welded.

Cutting away must be continued until sound concrete only is left, suitably shaped to allow the new concrete to flow, and be tamped, into position without leaving unfilled corners or pockets. The surface is left rough and washed clean.

Shuttering must permit easy access for the new concrete. The top part should be hopper shaped, the projecting ramp of concrete being cut away gently before the concrete has hardened. For the head of a column, especially if the beam connections are also cracked, it may be necessary to cut a filling hole or holes through the floor above. The clean meeting surface of the old concrete is coated first with a paste of neat cement, then, if accessible, with a layer, ¼ in. thick, of cement mortar, 1:3, well worked into the irregularities of the surface immediately before closing the shuttering and pouring the new concrete.

A method which has been used successfully to repair column heads, and to avoid the use of elaborate shoring, was to level off the column core below and above the space to be reconcreted, to fit steel bearing plates on mortar beds and a short puncheon of steel of I section of exactly the right length to allow the column to resume, without delay, its share of dead load. The concrete which is subsequently cast round the steel puncheon will, in due course, take its share of live load. If cracks are found in a column, so small, about 0.004 in., that they can be closed by a coat of whitewash, it is unlikely that serious loosening or displacement of steel has taken place. If wider cracks than this are found, up to, say, 0.030 in. wide, pressure grouting should provide a satisfactory repair. For this purpose a mixture of equal parts by weight of finely ground cement and water, injected under a pressure of 400 lb./sq. in. has been used with success in the U.S.A. (See *Concrete*, February, 1944, *Cement Mill Section.*)

For superficial damage, the methods suggested later for the repair of concrete columns damaged by fire should prove suitable.

2. *Beams.*—The effect on beams of an explosion inside a building is to produce either an overload or a reversed load. In both cases shear and/or tension cracks are likely to be formed. If these are small, they may be treated in the same way as cracks in columns. Wide cracks probably show that some destruction of bond between steel and concrete has been caused. Loosened concrete should be cut away and replaced. If this form of damage is extensive, repair may require that the floor be shored up and the damaged portion of the beam concrete cut out and renewed.

The presence of small cracks caused by reversed loading will have little effect on the behaviour of the beam under its normal load, other than a slight increase of deflexion. Tests of 1/5 scale experimental beams seem to show that the tolerable limit is reached when upward deflection accompanied by reverse shear cracks is 1/240 of the span, and when upward deflection accompanied by tension is 1/120 of the span.

3. *Floors.*—Floor slabs severely cracked are not worth repair. Slight tension cracks are probably not serious. More severe tension cracks could be repaired by the methods advocated for repair of fire-damaged floors. Slight cracks on the upper face, caused by reversed bending, could be grouted; but no experimental evidence is yet available as to the practical limits of repairability for cracked floor slabs.

THE EFFECT OF FIRE ON REINFORCED CONCRETE.

Fire affects both the concrete and the steel of a reinforced concrete member; but most members damaged by fire are still able to carry their loads. Collapse

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is usually limited to a few members so placed that their exposure to high temperatures is exceptionally severe or prolonged.

The concrete is affected first. The heated surface expands and cracks; then pieces become detached and spall away. This may proceed until the reinforcement is exposed, when the reinforcement is liable to suffer in the way already noted when discussing the effect of fire on structural steelwork, but if the cover was adequate for the normal fire risk of the building, this should not take place, if at all, until the greatest intensity of fire exposure is passed. In addition to causing cracking by unequal expansion at the surface of concrete, high temperatures affect its strength.

Repairs to Reinforced Concrete Members Damaged by Fire.—1. *Columns.*—According to the severity of the attack, fire damage to reinforced concrete columns takes the form of surface cracking, spalling away of cover concrete, discolouration of the concrete attacked, local buckling of the vertical rods between hoops, softening of core concrete, and in extreme cases complete collapse.

Typical procedure in repair would be:—

(1) Where damage is confined to cracks not wider than 0.004 in. apply a coat of whitewash.

(2) Where there are deep cracks varying in width from 0.004 in. to 0.030 in., grout under pressure, as mentioned under repair to columns damaged by high explosive.

(3) Where cover concrete has spalled, cut away and renew the damaged cover with a fine mesh reinforcement embedded in the new casing. The mesh provides a key, controls shrinkage, and roughly doubles the fire resistance, as an insulating covering layer so reinforced remains in position even when the concrete becomes friable under heat.

(4) If vertical rods have buckled, but not by more than half the diameter of the rod, it is doubtful whether action other than described above need be taken.

In the cases so far considered it has been assumed that the column is still adequate as a structural member and that damage is only superficial.

In the typical cases which follow it is assumed that repairs should be such as to reinstate lost strength.

(5) If vertical rods have buckled by more than half their diameter, the rod should be cut, straightened in position while heated by a blow lamp to a cherry-red heat, and butt-welded. New links should be provided immediately above and below the weld in the main rods. The ends of each link should overlap about 4 in. and be welded together along the lap. If actual tension has to be provided for, splice bars may be required in addition to butt welding. Repair to the concrete should be as already described.

(6) If core concrete has been damaged by heat, the extent of undamaged concrete, reddened concrete and so forth, must be discovered. Design stresses are normally based on the strength of concrete at 28 days. It has been suggested, as a basis of calculating strengths in repair, that it would be reasonable to expect the undamaged core concrete to have attained 1.3 times that strength; and reddened concrete 0.65 times. The strength of friable grey concrete is negligible, and this material, if found, should be replaced by new "high-grade" concrete, which should be made at least equivalent to the original undamaged concrete in strength.

(7) In the rare cases where the computed strength of a column, if repaired as just described, would be less than the estimated design strength of the column, either the whole core should be replaced by new concrete, or the diameter of the column could be increased.

2. *Beams.*—As in the case of columns, damage will consist of cracking, spalling, discolouration of concrete, and perhaps reduction of strength in the steel.

The repair of cracks, without spalling, may be done in the same way as for columns. If concrete has spalled from the soffit, the main reinforcement will usually be exposed. If the rods still make effective contact with the interior concrete, and have not appreciably sagged, softened concrete should be cut away, a steel wire mesh wired on to the existing stirrups, shuttering erected and new concrete poured. If superficial injury to the concrete extends far up the side of the beam, it would be advisable either to cut holes through the slab above the beam, in order to pour concrete from the floor above, or to use the cement gun. Whether the concrete is poured or shot, a steel wire mesh, securely wired to the existing steel, should be embedded in the new surfacing concrete.

If injury to the concrete extends much deeper than the reinforcement, or if marked sag has taken place, the cracking of the concrete will usually be too serious for merely local repair, and steel should be suspected of possible loss of strength. The whole, or some considerable part, of the beam should be recast, additional main steel being added if a sample rod or, more simply, stirrup, taken from the beam shows loss of strength. The probability is that the slab would also be damaged beyond simple repair, and that reinstatement of the beam and its adjacent slabs would be virtual rebuilding of the severely damaged bays.

3. *Floors.*—Damage by fire to the soffit of a concrete slab produces cracks which are either so fine as to be negligible, or which run up to the level of the reinforcement and suggest the probable loosening of the concrete below that level. Under more severe attack the concrete below the reinforcement spalls away.

All loose and soft concrete still in position should be cut away. If damage is limited to small areas, these could be repaired by rendering, embodying a steel wire mesh or netting, wired to existing reinforcement, to provide a key and control shrinkage cracks. If large areas of slab soffit need repair, it is worth considering the use of the cement gun. If steel has been exposed to fire, and is surrounded by discoloured concrete, a sample should be removed for test, especially if the reinforcement consists of cold worked steel. Any deficiency in moment of resistance, to meet the loading the repaired slab is intended to take, should be made good by choosing the additional steel mesh which would, in any case, be required as key for the new work, of such a size that it will bring the total cross sectional area of steel up to the required value.

The most convenient means of replacing the soffit of a slab would appear to be the cement gun. To test its efficacy, an experimental repair and loading test was carried out in a building where the owners were good enough to permit a portion of fire-damaged floor to be made the subject of experiment.

A panel was chosen, of 12 ft. 6 in. span, and 22 ft. 6 in. long, between centres of steel beams. The structural slab was 7 in. thick of 1 : 2 : 4 ballast concrete, with 1½ in. top cover of screeded fine concrete. The main reinforcement consisted of mild steel bars, ¼ in. diameter at 6 in. centres. All plaster had fallen, after performing some useful service in delaying fire attack. In some parts of the panel the concrete soffit was still intact; but generally the cover concrete had fallen away, leaving the rods half embedded in discoloured concrete. In a few places porous patches of concrete had spalled to a depth of 2 in.

Before repair the slab was loaded by stacking bricks in isolated piles in stages of 20 lb. a square foot up to a maximum load of 150 lb. a square foot. Deflection increased at a general rate of 0.034 in. for each 20 lb./sq. ft. added. After repair by means of the cement gun the slab was loaded up to 200 lb./sq. ft., the general rate of increase of deflection being 0.018 in. for each 20 lb./sq. ft. added. Fuller details of the procedure and results are given in the Note on Repair of Solid Concrete and Hollow Tile Floors Damaged by Fire, published by the Building Research Station.

The tests showed that a slab, apparently in bad condition, could carry a substantial superload without showing any sign of distress, and that after repair its stiffness had nearly doubled.

A similar test was applied to a hollow-tile roof slab in a building where repairs to roof and floors were in progress. Comparison of stiffness before and after repair was not made in that case; but the repair proved completely satisfactory, keeping the weather out of a building of which the lower floors were in use, restoring valuable space to service in half the time estimated for rebuilding, without interference with service pipes, leads, etc., which had not been injured by fire. This case is also reported in the published note quoted above.

FOUNDATIONS.

Damage done to foundations, other than by a direct hit, is almost entirely caused by earth shock. It is convenient to divide the area affected into three zones:—

(i) The crater, from which the original soil was ejected and which subsequently contains *débris* or filling;

(ii) The plastic zone, in which the earth remains, but with some permanent displacement; and

(iii) The elastic zone, through which a train of compressive waves, like those of an earthquake shock, spread outwards; but in which the earth suffered no permanent displacement.

Where movement of the foundations of an important building is observed, a soil survey should be made, and the results interpreted by an expert, as variations of soil resistance caused by explosion are difficult to distinguish from irregularities originally present.

Long foundatons in Zone III may be cracked by differences in severity and phase of the shock wave. Foundations partly in Zone II will also suffer permanent displacement; but loss of bearing capacity is improbable, unless water-pipes, drains, or the natural flow of ground drainage have been so disturbed as to cause flooding. It will often be possible to rebuild a shattered wall on an existing foundation, taking the precaution of replacing the lowest courses of brickwork by a concrete sill, reinforced at top and bottom, to overcome minor local irregularities, cracks, or slight changes of level in the existing foundation.

Piled foundations may suffer in two ways: damage to the heads of piles, and cracking of their shanks at some lower level. After the load has been relieved by shoring, broken pile heads can be cut away and replaced by mass concrete. If displacement suggests the probability of hidden cracks at an inaccessible depth, and if it is not considered safe to carry the load on cracked piles, pressure piles can be driven just outside the foundation, connected together by a reinforced concrete beam, and the superstructure underpinned from this beam.

Underpinning is a matter of normal structural engineering practice, and no account of the methods used, sufficiently full to be of value, can be given at the end of a general paper on repairs already somewhat long; but a note on the repair of damaged foundations will appear in the series issued by the Building Research Station.

The work described is part of the general programme of the Building Research Station of the Department of Scientific and Industrial Research. The author has not been personally concerned with the whole of it; but has been privileged to include in his paper reference to the work of colleagues. Practical experience counts for much in the development of successful and economical methods of repair, and the investigation owes much to the ready way in which professional men and others in the industry have contributed their experience and criticism. Both on his own behalf and on behalf of the Station the author wishes to express grateful appreciation of the help so received.

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OBITUARY

F. Bligh Bond, F.R.I.B.A.

The death is announced of Mr. Frederick Bligh Bond, F.R.I.B.A., at Dolgelly, in his 81st year. He was formerly Director of Excavations at Glastonbury Abbey. Bond was articled to C. F. Hanson and worked for two years with Sir Arthur Blomfield, when he set up on his own account at Bristol. His buildings include the Medical School and other buildings at the University, the Handel Cosham Memorial Hospital and the Music School at Clifton College. Bond understood well mediæval woodwork, and restored many screens and roods in West of England churches, particularly at All Saints, Clifton. At Glastonbury he claimed to have discovered several sites by psychical means. In 1924 the Dean of Wells, on behalf of the trustees of Glastonbury Abbey, requested him to classify, label, and arrange in cases in the Abbot's kitchen the loose relics found by him in his excavations at the ruins, it being stated, however, that "this does not imply any permission to proceed with further search for treasure, suggested by antiquarian knowledge, divining rod, or psychic research."

Besides being director of excavations at Glastonbury he served as honorary diocesan architect for Bath and Wells and consulting architect to Malvern priory church, and he was on the council of the Somerset Archæological Society. He became A.R.I.B.A. in 1895 and F.R.I.B.A. in 1896, retiring in 1930, but was reinstated in 1940. He published several books.

Sir George Humphreys, K.B.E., M.Inst.C.E.

Sir George William Humphreys, K.B.E., T.D., M.Inst.C.E., formerly chief engineer to the London County Council, whose death in London is announced, was born in 1863, and educated at Mill Hill School. He was trained in railway work on the Great Western Railway. When in 1902 he gained in open competition the position of Manager of Works to the L.C.C., he had had experience of dock and harbour engineering in this country and in France. Ten years later he was appointed chief engineer in succession to Sir Maurice Fitzmaurice.

After the flood which occurred in the Thames on January 7, 1928, he and Sir Frederick Palmer were asked to examine the question of the adequacy of the river defences in London, and their advice, which was followed by the L.C.C., was that the defence works should be raised throughout the county in progressive steps from east to west. Humphreys was again associated with Sir Frederick Palmer in the Charing Cross and Waterloo Bridge schemes, and he was the designer of the new Lambeth Bridge. As administrator of housing development schemes for the L.C.C. he was responsible for many building estates. During the 1914-18 war Humphreys, who became a C.B.E. in 1920 and a K.B.E. in 1927, was vice-chairman and chairman of the Munitions Works Board of the Ministry of Munitions. He was a member of the committee of experts entrusted with the preservation of St. Paul's, and from 1928 to 1933 he was chairman of the Building Research Board of the Department of Scientific and Industrial Research. In 1930 he was elected president of the Institution of Civil Engineers.

R. H. Spalding, F.R.I.B.A.

We regret to record the death of Mr. Reginald Henry Spalding, F.R.I.B.A., of 12, New Court, W.C.1. Educated at the A.A. (where he won the Silver Medal), and University College, London, he set up in practice in Lincoln's Inn, and was successful in a number of competitions, notably the Girls' Grammar School, Berkhamsted; the Modern School, Luton; Lyndhurst Half Institute, London; and Stockport Girls' High School (with E. G. Theakston). He designed many churches and Sunday schools, etc. He was 68.

John A. Lucas, F.R.I.B.A., F.S.I.

The death has taken place in Exeter of Mr. John Archibald Lucas, F.R.I.B.A., F.S.I. Mr. Lucas, who was 75, held many architectural appointments in the Exeter region, and was a past-president of the Devon and Cornwall Architectural Society. Among his works were Harcombe, for Sir E. C. Wills, Bt., and Lloyds Bank, Exeter. He had served continuously on Exeter City Council for 44 years and had been an alderman since 1919.

W. E. Brooks, F.R.I.B.A.

The death has taken place at Croydon of Mr. William Edward Brooks, F.R.I.B.A., A.M.T.P.I., late Divisional Architect and Second Officer, Architects' Department, London County Council.

SOCIETIES & INSTITUTIONS

R.I.B.A.

Membership.

On February 13, the following members were elected :—

As Fellows (11).

E. B. Clarke (Purley, Surrey); F. R. Cox (Burford, Oxon); F. A. C. Maunder, Dip.Arch. Durham (Portsmouth); S. M. Richmond (Newcastle-upon-Tyne); A. Clayton (Manchester); R. S. Hill (Belfast); A. B. Scarlett (Liverpool); J. Shearer, A.R.S.A. (Dunfermline). (*Overseas*): H. T. S. Alwis, Dip.Arch. (Lvpl.) (Columbo, Ceylon); Capt. I. A. Elsworth (Cape Town); M. Policansky, B.Arch. (Cape Town).

As Associates (21).

T. Clokey (Capt., R.E.) (University of Liverpool); R. V. Crowe (Capt., R.E.) (A.A.); (Miss) B. D. Hodsman, Dip.Arch.Leeds (Leeds School); A. Merrill; (Miss) M. P. Peter, Dip.Arch. Leeds (Leeds School); H. V. S. Phillips (Birmingham School; W. Taylor (A.A.); Major J. S. Thompson, Dip.Arch. (University of Liverpool). (*Overseas*): C. F. Corne, B.Arch. (Auckland) (University College, Auckland, New Zealand); J. De Bruyn, B.Arch.(Rand) (Johannesburg); A. C. Dold (Bulawayo, Southern Rhodesia); K. W. Douglas (University College, Auckland, New Zealand); F. J. Durr, Dip.Arch. (Johannesburg); K. H. Gardner (Muizenberg, C.P., South Africa); P. J. Khambata (Bombay); G. P. Nipane (Bombay); C. Rabie, Dip. Arch. (Newlands, Cape); S. P. Satsangi, G.D. Arch. (New Delhi); (Miss) E. M. Spence, B.Arch (Johannesburg); F. K. Te Water (Cape Town); E. J. Trope (Johannesburg).

As Licentiates (19).

H. J. Y. Amy, A.M.T.P.I. (Capt., R.E.) (Leeds); S. P. Atkin (London); G. F. Bailey (London); I. Caldwell (Lincoln); S. E. Carroll (Weeley); R. M. Clive (Stranraer); L. J. Dunn (Major, R.E.) (Eastbourne); C. E. Fox (Dewsbury); R. S. Gillo (London); T. Jack (Glasgow); J. H. Johns (Portsmouth); A. W. Johnstone (Manchester); W. H. Lott (London); V. T. H. Portwood (Watford, Herts); H. J. Shannon (London); C. H. Stephens (Bristol); R. H. West (Taunton, Somerset); C. Wild (Manchester); J. B. Wingate (Capt.) (Bearsden, Dumbartonshire).

A.B.T. ANNUAL GENERAL MEETING.

The annual general meeting of the A.B.T. was held on Saturday, March 3, at the London School of Hygiene and Tropical Medicine. The meeting passed a resolution recommending the general council to exercise its powers of co-option in respect of several demobilised members.

Officers and General Council. The following were elected :

President: Kenneth Campbell, A.R.I.B.A.

Vice-Presidents : A. Boyd, A.R.I.B.A., B. H. Cox, F.S.I., L.R.I.B.A., D. Percival, B.A. (Arch.), A.R.I.B.A., R. L. Townsend, A.R.I.B.A.

General Council : J. W. Atkinson, M.A., E. A. Blade, D. W. Brewster, F. C. Clarke, D. R. Cresswell, A.R.I.B.A., C. W. Day, R. D. Manning, A.R.I.B.A., I. C. Martin, H. Moncrieff, A.R.I.B.A., G. H. Morris, A. Schauder, H. G. Swann.

BOMB DAMAGE REPAIRS

MR. SANDYS ON PROGRESS.

SPEAKING at a luncheon of the Association of Metropolitan Borough Engineers and Surveyors on Monday, March 5, MR. DUNCAN SANDYS, Minister of Works, referring to bomb-damage repairs in London, said results had proved once again that British local authorities possessed the initiative, adaptability and organising capacity to tackle and overcome even the most unexpected and perplexing situations. He thought everyone would now rightly acknowledge that, in this difficult winter campaign for the repair of London, the Metropolitan Borough Councils had risen magnificently to the height of the emergency. At the same time the borough engineers and surveyors, on whom so much of the responsibility had fallen, had, by the results achieved, added fresh lustre to their already high reputation for efficiency and devotion to the public service.

"There are some," proceeded the speaker, "who think the repairs of London could be organised centrally as one vast building operation. The planning of the overall programme, the distribution of building materials and the allocation of labour must, of course, be controlled centrally; but the work itself cannot be treated as one enormous contract. It consists of hundreds of thousands of separate, individual jobs, awkward little jobs, each slightly different from the other. In fact, it is just the kind of work which is admirably suited to the experience and training of the small builder. That is why, as a matter of policy, we decided to spread contracts for repairs as widely as possible among a very large number of small contractors. Contracts for London repairs are to-day divided among some 5,400 builders. Of these only 200 firms have more than 50 operatives, whilst over 1,000 of them employ less than seven men apiece. It will thus be seen that London is being mended by an army of small builders. Nobody understands this kind of work better than they, and they are doing a fine job.

"The labour force on this job is now higher than it has ever been. It now stands at 137,000. This compares with 22,000 last June. It may interest you to know that, at the height of the blitz in 1941, the repair workers over the whole country never exceeded 80,000. The increases during the past few weeks are attributable to two principal factors; firstly, the extension of the £10 limit in the Home Counties has thrown up labour which had previously been engaged on less urgent work; and, secondly, Northern Ireland has responded magnificently to our appeal for builders and operatives to come over here and lend us a hand. Several thousands of Ulstermen have arrived in London in the last few weeks. I expected it. When her help is needed, Ulster never fails. Altogether the labour force from the provinces amounts to over 50,000 men. A considerable proportion of these are volunteers and are largely organised into groups to ensure the fullest possible use of the small builder. We would not have had any hope of getting through the job in time without the help of these men from all parts of the country. As it is, we are hoping, although we cannot be sure yet, that we shall reach, or nearly reach, our target of 719,000 repaired houses by the 31st of this month. I'm not making any forecasts, but I'm hopeful. These 719,000 which we are seeking to repair by the end of this month will include 90 per cent. of the habitable houses which were damaged during the main flying-bomb attacks last summer. They will also include a proportion of houses damaged this winter.

"As everyone knows, there has been much fresh damage to Southern England since the present programme of repairs was started last September. Several months' work still remains to be done before the state of bomb-damage repairs here reaches the standard attained in other parts of the country. I hope, therefore, that builders and operatives from the provinces will appreciate the need for their continued help a little while longer. You and I have still got a big job on hand. However, we are making substantial progress. Our organisation is now much stronger and our methods are greatly improved. Last week's total of repaired houses went up by about 40,000. This is nearly double the weekly rate of three months ago. Well done! Keep it up, and good luck to you."

"THE BUILDER."
PRICES AND WAGES
Until further notice and in order to devote more space to news, *The Builder* copyright "Prices Current of Materials" and Rates of Wages will be given in the first issue of each month only. Current changes will be given weekly as they occur.

Glass Bricks.

Messrs. Pilkington Brothers, Ltd., announce that in view of the recently published British Standard No. 1207-1944 "Hollow Glass Blocks," and to accord better with the terminology of the architectural profession, also to avoid difficulties or misunderstandings in the building trade, they have decided that in future glass bricks manufactured by them shall be known as Insulight Hollow Glass Blocks.

CROFT ADAMANT
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Telephone: LEIGHTON BUZZARD 3228.
Branch Office:
WEST BANK, WIDNES.
Telephone: WIDNES 2656-7.
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IN PARLIAMENT

Housing Sanctions.

MR. BOSSOM asked the Minister of Health, as his Memorandum on Plans for Houses and other Buildings did not specifically state the number of departments and authorities that must give approval before a substantial building could be erected and occupied, whether he could give a complete list of the different departments and authorities to which local authorities or owners must apply before each different type of building could be built and occupied.

MR. WILLINK said that the normal system of referencing, apart from war-time controls, and consultation with statutory undertakers, might conveniently be set out as follows:—

By whom erected.	*Reference Authority(ies).*
I. DOMESTIC BUILDING.	
(1) Local Authority:	
(*a*) London County Council.	(i) Minister of Health. (ii) Sanitary Authority. (iii) Planning Authority, where other than the Council.
(*b*) Metropolitan Borough Council.	London County Council.
(*c*) Provincial Council.	(i) Minister of Health. (ii) Planning Authority if different from the Council. (iii) Highway Authority if different from the Council.
(2) Private Enterprise:	
(*a*) In London ..	(i) London County Council. (ii) Metropolitan Borough Council.
(*b*) In Provinces ..	(i) Local Authority. (ii) Planning Authority if different from (i). (iii) Highway Authority if different from (i).
II. PUBLIC BUILDING.	
(1) Local Authority ..	(i) Minister concerned. (ii) Planning Authority if different from Local Authority. (iii) Highway Authority if different from Local Authority. (iv) Licensing Justices when necessary.
(2) Other bodies or persons.	(i) As in I. for domestic buildings erected by private enterprise. (ii) Licensing Justices when necessary.
III. COMMERCIAL BUILDING.	
Private Enterprise ..	(i) As in I. for domestic buildings erected by private enterprise. (ii) Licensing Justices if necessary.

Work on Mulberry.

MR. BOSSOM asked the Secretary of State for War whether he was still retaining the several hundred architects, engineers and other members of the building industry who were employed in the construction of Mulberry, or was he making them available for supervisory work or to prepare schemes for post-war housing.

MR. WILMOT, Parliamentary Secretary to the Ministry of Supply, who replied, said that this great work was carried out by a large number of co-operating contractors who employed their own technicians. No architects and only about a dozen engineers and other technicians were *directly* employed by the Ministry of Supply. One or two remained to clear up certain outstanding matters.

SIR J. GRIGG: The War Office is not holding any of these people either.

Rent Control.

VISCOUNT HINCHINGBROOKE asked the Minister of Health whether he had yet received the Report of the Inter-Departmental Committee on Rent Control.

MR. WILLINK said he had. He was arranging for its early publication.

OFFICIAL NOTIFICATIONS

Stocks of English Oak.

In connection with the need which may arise after the war for special timbers for the reconstruction and repair of historic buildings and national monuments, the Timber Control wish to ascertain in greater detail what stocks of prime dry English oak, suitable for interior construction and decoration, are available.

Merchants are therefore requested to advise the Control of any stocks of prime English oak which they hold, cut prior to September, 1939, stating the approximate quantity of each thickness, whether cut through and through, quartered or wainscot cut, and the number of years cut and stacked.

Merchants should state if they are prepared to sell any or all of such stocks to the Timber Control on terms to be arranged or, as an alternative, whether they are prepared to hold any suitable material and give the first offer of it when required to the Government or to firm(s) entrusted with the execution of work of that character.

All communications should be sent to the Ministry of Supply, Timber Control, Department 111/6, Clifton Down Hotel. Bristol, 8.

Tax Relief for Post-War Industry.

The new Income Tax Bill gives effect to the Chancellor's proposals for tax reliefs to industry and agriculture in the post-war period. They are directed to assist the modernisation and re-equipment of buildings, plant and machinery so that industry can meet the challenge of the future. The main proposals are as follows:—An initial allowance of 10 per cent. of the cost of new industrial buildings, and an annual allowance of 2 per cent. to write off the balance of the cost. An initial allowance of 20 per cent. of the cost of new plant and machinery, and an increase in the annual allowance. An allowance for capital expenditure on farm buildings. An allowance to write off the cost of patent rights, and a corresponding charge on the vendor. An extension of the allowance for expenditure on Scientific Research, and for the exceptional depreciation of buildings, plant and machinery.

Control of Iron and Steel.

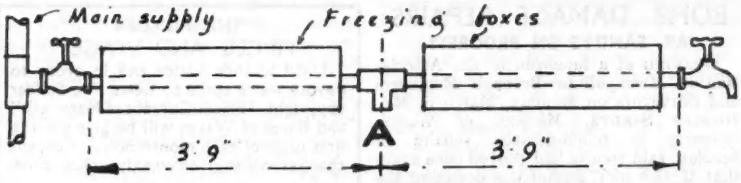
The Minister of Supply has made the Control of Iron and Steel (No. 39) Order, 1945, which came into force on February 26. It extends the list of iron and steel products of which limited quantities may be acquired by any person without licence and also increases the quantities. It also permits stockholding merchants to acquire, without licence, limited quantities of wire and certain wire products. It also permits any person to acquire, without licence, any quantity of cemented carbide hard metal.

The Minister of Supply has made the Control of Iron and Steel (No. 40) Order, 1945, which came into force on March 12. It alters the maximum prices for certain iron and steel products, the principal changes being reductions in prices for forging ingots and alloy steel and increases for pig iron, tubes, certain classes of steel wire and wire rope, and certain iron castings. Maximum prices are also provided for the first time for hot finished and cold drawn tubes to Admiralty specifications and for cast-iron brake drums. A list of the altered related schedules is available. Copies of either of the above orders are available from H.M. Stationery Office, York House, Kingsway, W.C.2, or through any bookseller, price 1d. each.

The Late Sidney J. Gaze.

We regret to announce the death of Mr. Sidney J. Gaze, managing director of Messrs. W. H. Gaze & Sons, Ltd., of Kingston-on-Thames, on February 8.

In recognition of his 26 years of excellent service with the firm, Mr. George W. Bruce, works manager, has been elected to the board of directors.



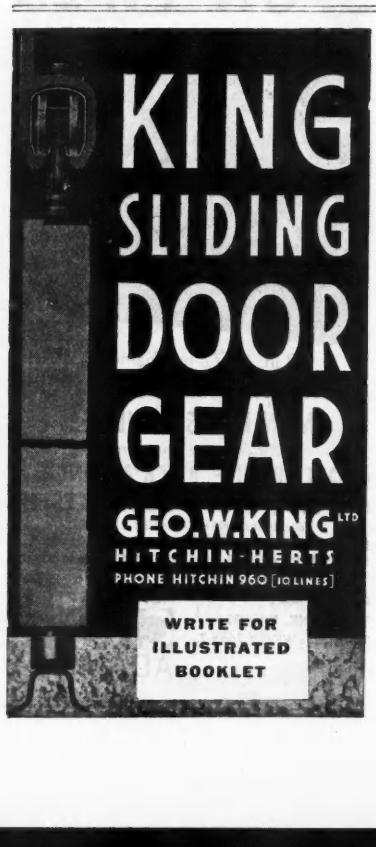
THE "ZEROSS" ANTI-FREEZE VALVE: METHOD OF TESTING.

NEW INVENTION

AN ANTI-FREEZE VALVE.

An invention which seems likely to offer a solution to the problem presented by freezing of domestic water pipes has recently been perfected and placed on the market by Messrs. S. Grahame Ross, Ltd. The invention takes the form of a small metal valve, inserted at vantage points in the pipes, which operates as soon as increased pressure is set up by the formations of ice in the pipe. The excess volume of water is thus discharged and the valve reverts when the pressure has been relieved. This "Zeross" valve is made in a range of sizes and types for all domestic and industrial water systems, and the firm's technicians are available to give advice and assistance on application to Bath-road, Slough.

The valve has recently been subjected to a series of rigorous tests, witnessed by engineers and officials of the Air Ministry, the Ministry of Works, the British Waterworks Association, the Metropolitan Water Board, and others. As we witnessed, no effort was spared to present these tests under conditions as near actual severe weather spells as possible, and all freezing was actuated by the application of solidified CO_2 at a temperature of −110 deg. Fahr. Pipes of copper, lead and wrought iron were employed, and, where the new valve had not been fitted, in every case either the pipe burst or else the joint sprang a leak. Where the "Zeross" valve was fitted, pressure was, in the case of the ½-in. pipes, relieved in the maximum time of 30 seconds.



THE SCOTTISH BUILDER

NEW BUILDINGS

CAMBUSLANG.—Plans prepared for canteen and dining-hall, for which the architect is Mr. J. A. Coia, 7, Hamilton-dr., Glasgow.

GLASGOW.—Plans in hand for canteen and recreation department at Govan-rd., for the Mission to Seamen's Trust Corporation, Ltd., for which the architect is Magnus Duncan, 263, Eglinton-st., Glasgow.—Plans prepared for alterations and additions at Torrisdale-st., for which the architects are Watson, Salmond & Gray, 217, Union-st., Glasgow.

LANARK.—Alterations and additions to be carried out at Auction Mart, also offices, etc., for which the architect is David McGibbon, 51, Cleveland-gdns., Newcastle-on-Tyne.

NEWARTHILL.—Plans prepared for scheme of reconstruction and additions for garage and workshops, for which the architect is Matthew Whitehill, 38, High-st., Newarthill.

FUTURE CONSTRUCTION

CONTRACTS OPEN

For some contracts still open, but not included in this list, see previous issues. Those with an asterisk are advertised in this number. The dates at the heads of paragraphs are those for the submission of tenders; a dagger (†) denotes closing date for applications; the name and address at the end refer to the person from whom particulars may be obtained.

BUILDING

MARCH 24.

Consett U.D.C.—Completion of 18 two-story houses and 12 bungalows at Delves-la. J. J. Eltringham, Derwent-st., Blackhill.

MARCH 28.

Rochdale C.B.—Erection of kitchen at Girls' High School. B.S.

APRIL 10.

Rutland C.C.—Erection of additions and sundry alterations at the Castle, Oakham. E. J. Williams, 13, New-st., Leicester. Dep. £1 (cheques payable to Clerk at County Offices, Oakham).

NO DATE.

Weston-super-Mare T.C.—Applications invited from builders to tender for rebuilding 50 houses at Bournville. B.E.

MATERIALS, ETC.

MARCH 21.

Clayton-le-Moors U.D.C.—S.

MARCH 24.

Ebbw Vale U.D.C.—E. and S.

MARCH 26.

Willenhall U.D.C.—N. D. Martin, M.Inst.M. & Cy.E.

PAINTING, ELECTRIC LIGHTING, HEATING, ETC.

MARCH 22.

Bury T.C.—Internal decoration of elementary schools. B.S.

MARCH 26.

Beds C.C.—External and internal painting and decorating of Pavilions and portions of Administrative Block at Mogerhanger Park Sanatorium. County A. Dept., Shire Hall, Bedford. Dep. £1 1s.

Montgomeryshire E.C.—External painting of schools. T. G. Davies, D. of E., County Ed. Offices, Newtown.

MARCH 29.

Atcham R.D.C. — External painting of 56 houses. S., 24, St. John's Hill, Shrewsbury.

APRIL 6.

Birmingham T.C.—External painting of houses. W. Smith, General Manager, Estates Dept., 19-29, Sumner-row, Birmingham, 3.

APRIL 9.

Worcester T.C.—External painting and repairs at Cottage Homes. City E. Dep. £2 2s.

NO DATE.

***Land Settlement Association, Ltd.**—External Painting of Glasshouses and Agricultural Cottages at Cambs and Beds. Surveyor of Works, Land Settlement Assoc., Ltd., Cambridge-rd., Abington, Cambs.

ROADS, SEWERAGE AND WATER WORKS

MARCH 22.

Alderley Edge U.D.C.—Construction of roads and sewers at Bollin Fields. C. Watkins, Architect, Council Offices.

MARCH 24.

Doncaster C.B.—Construction of roads and sewers. Estates S., 3, Priory-pl. Dep. £2 2s.

Trowbridge U.D.C.—Construction of roads and sewers. E. and S. Dep. £2 2s.

MARCH 26.

Lincoln T.C.—Construction of roads and sewers. City E. Dep. £2 2s.

MARCH 27.

King's Lynn T.C.—Tarspraying roads. Acting B.E.

Oxford T.C.—Construction of roads and sewers. City E. and S. Dep. £5.

MARCH 30.

Sunderland C.B.—Construction of roads and sewers at Nookside. B.E. Dep. £2 2s.

MARCH 31.

Newburn U.D.C.—Construction of roads and sewers. E. Dep. £2 2s.

APRIL 2.

Berwick-on-Tweed T.C. — Construction of roads and sewers. B.S. Dep. £2 2s.

APRIL 3.

Chester T.C.—Construction of roads and sewers. City E. and S

APRIL 4.

Grantham T.C.—Construction of roads and sewers. B.E. and S. Dep. £1 1s.

APRIL 5.

Sutton and Cheam T.C.—Surface dressing roads. B.E. and S.

APRIL 6.

***Sheerness U.D.C.**—Construction of roads and sewers. R. T. Watts, Acting E. and S. Dep. £2 2s.

APRIL 14.

***Cirencester U.D.C.**—Construction of roads and sewers at Chesterton housing estate. Eric Cole and Partners, architects and surveyors, Dyer-st. House, Cirencester. Dep. £2 2s.

NO DATE.

Maidstone T.C.—Construction of roads and sewers. B.S.

PUBLIC APPOINTMENTS

MARCH 21.

Glasgow.—Architects and Surveyors for War Damage Commission. Write, quoting EA995A, to Ministry of Labour and National Service, Appointments Dept., Central (T. and S.) Register, Room 5/17, Sardinia-st., Kingsway, London, W.C.2, for necessary forms.

Grimsby C.B.—Senior Architectural Assistants (2), permanent. £400-£25-£450 p.a., plus bonus 19s. per week. Write, quoting EA1247XA, Ministry of Labour and National Service, Appointments Dept., Central (T. and S.) Register, Room 5/17, Sardinia-st., Kingsway, London, W.C.2, for necessary forms.

MARCH 22.

Northern Polytechnic.—Teacher of Architecture. Forms from R. H. Currell, C., Northern Polytechnic, Holloway-rd., N.7.

MARCH 26.

***Bermondsey T.C.**—Council Architect. £1,000 p.a. (must be under 45 years of age on 1st April, 1945). Application forms from S. E. Freeman, T.C.

MARCH 29.

***Bristol T.C.**—Temporary Assistant Architects. £350-£450 p.a., plus bonus. J. Nelson Meredith (F.), City A.

MARCH 31.

Lincoln C.C.—Architectural Assistant. £260-£15-£320 p.a., plus 19s. p.w. bonus. J. E. Blow, C. of C.C., County Offices, Sleaford, Lincs.

APRIL 3.

***Essex C.C.**—Temporary Building Surveyor and Architectural Assistant. J. E. Lightburn, C. of C.C., County Hall, Chelmsford.

***Portsmouth T.C.**—Planning Assistants. F. Sparks, T.C., Royal Beach Hotel, Southsea.

***Warwick C.C.**—Three Architectural Assistants (R.I.B.A. members). £450 p.a., plus £49 8s. bonus and £29 5s. for temporary increase in office hours. A. C. Bunch (F.), County A., Shire Hall, Warwick.

NO DATE.

***London.**—Studio Master at Architectural Association School of Architecture. Secretary, Architectural Association, 36, Bedford-sq., W.C.1.

GENERAL BUILDING WORK

Alderley Edge.—Cheshire E.C. propose conversion of "Oakwood," Beechfield-rd., into maternity home.

Alnwick.—Hetherington & Wilson, County-chbrs., Westgate-rd., Newcastle-on-Tyne, have been appointed architects by U.D.C. in connection with post-war housing plans.

Alfreton.—Miners' Welfare Commission, Ashley Court, Ashtead, Surrey, propose erection of pit-head baths at Pilsley collieries, for Pilsley Collieries Co., Ltd.

Anglesey.—C.C. propose erection of eight modern police stations. Plans by J. E. Rees (A.), County A., County Hall, Llangefni.

Barnsley.—Directors of Barnsley Brewery Co., Ltd., Oakwell Brewery, propose hotel at Lodge estate.

Bolton.—Board of Governors of National Children's Home and Orphanage, Edgworth, propose erection of further 18 homes.

Bradford.—E.C. propose school at Buttershaw.

Brighouse.—T.C. approved: Schemes for civic centre and 'bus station; T.C. to convert Waring Green Church as Youth Centre, at £630.—T.C. approved: Additions for Kamsden, Camm & Co., Ltd.; structural alterations at "Country House" Inn, Hipperholme, for Leeds & Wakefield Breweries, Ltd., Melbourne Brewery, Leeds.

Bucknall.—Parker's Burslem Brewery, The Brewery, Burslem, propose hotel at Townend.

Carlisle.—Cumberland E.C. propose Secondary school between Carlisle and Penrith. Plans by J. H. Haughan (F.), County A., 4, Alfred-st. North.

Cockermouth.—North-Eastern Housing Association, Ltd., Metro-Vick House, Newcastle-upon-Tyne 1, propose erection of 86 houses. Plans by Oldfield, Simpson & Saul, National Bank-chbrs., Workington.

Crewe.—Cheshire Health Committee propose extension of buildings at Cranage Hall for Mentally Defectives, Holmes Chapel.

Derbyshire.—E.C. to submit plans to M. of E. for temporary school, including kitchen and dining-room at Allestree, at £9,000.

Derbyshire.—E.C. propose alterations and additions at Belper Herbert Strutt school, Heanor County Secondary school, Matlock Ernest Bailey school, New Mills County school and Staveley Grammar school.

Haydock.—U.D.C. approved 174 houses at Park-st. and Park-av. estate.

Hyde.—T.C. propose crematorium.

Kent.—C.C. to acquire property at Folkestone for provision of maternity unit.

Leigh.—T.C. propose branch libraries at Thompson-st., and Nel Pan-la. housing estates.

Leeds.—T.C. approved: Provision of 36 additional beds at Gateforth Sanatorium, at £17,021; reconstruction of Cookridge-st. Public Baths, at £35,000.

Lenton.—Mitchells & Butlers, Ltd., Cape Hill Brewery, Smethwick, propose erection of "Priory" hotel at junction of Derby-rd. and Woollaton-vale, Lenton Abbey.

Manchester.—T.C. approved: Additions to Palace Theatre of Varieties, Oxford-st. and Whitworth-st., for Directors, Thorpe & Smith (LL.), architects, 66, Deansgate.—Cornbrook Brewery Co., Ltd., Ellesmere-st., Hulme, propose rebuilding "Crown" hotel with offices over. Plans by E. A. Newton, Leach & Brooks (A.), 28, Kennedy-st.

Manchester.—E.C. propose: Alterations and additional accommodation at School of Art.—Managers of St. Clement's C. of E. school, Longsight, propose alterations and improvements to school premises.

Middlesbrough.—T. A. Crawford, Middlesbrough, is architect for factory for F. T. Peacock & Sons, and club house and bowling green at Acklam-rd. South, for Acklam Village Club; Kitching & Co., 40, Albert-rd., Middlesbrough, have prepared plans for alterations and additions at "Lord Raglan" hotel, for J. W. Cameron & Co., Lion Brewery, West Hartlepool.

Nelson.—Lancashire E.C. propose two additional classrooms and cloakroom at Secondary school, at £2,235.

Newport Pagnell.—Bucks C.C. propose alterations and improvements to sanitary accommodation at County P.A.I., at £2,800.

Newton-le-Willows. — U.D.C. approved 318 houses at Farebrothers Farm.

Northants.—E.C. propose extensions at Northampton Technical College for Junior Technical school.

Notts.—C.C. propose Farm Institute, at £20,000.

Oldham.—Health Committee propose: Conversion of Tank House at Boundary Park General Hospital for pathological laboratory, at £2,500.

Rotherham.—Whitworth, Son & Nephew, Ltd., The Brewery, Wath-upon-Dearne, propose hotel at Old Denaby.

Runcorn.—N.F.S. propose central fire station.

Sheffield.—E.C. received approval of M.O.E. to acquire site for School of Art and College of Technology.

South Westmorland.—R.D.C. propose mortuaries at Milnthorpe, Kendal and Kirby Lonsdale.

Stockport.—Committee of Y.W.C.A. propose erection of Youth Institute.—Walker & Homfray, Ltd., Woodside Brewery, Eccles New-rd., Salford 5, propose rebuilding "White Bear" hotel.

Tynemouth.—L. J. Couves & Partners, Carliol House, Newcastle-on-Tyne, are architects for box assembling shop for Dryers, Ltd.—Plans prepared for 212 houses at Preston North-rd., for T.C.—B.E. prepared plans for community centres, at £12,500.

Wallsend.—M.O.W. to erect dining-hall at St. Columba's school.

Wallsend.—T.C. to acquire nursery site at Station-rd.

Warrington. — E.C. propose elementary schools at Orford, Dallam Farm and Chester-rd. estates.

Wigan.—T.C. approved 332 houses at Laithwaite House Farm estate.

York.—North Riding E.C., County Hall, Northallerton, propose additions at Clifton Without Junior and Infants' schools, at £1,500.

BRITISH RESTAURANTS AND CANTEENS

Accrington.—Lancashire E.C. propose kitchen and dining-room at High School for Girls.

Ashton-under-Lyne.—T.C. approved kitchen and dining-room at Heginbottom Technical school, for Lancashire E.C.

Bury.—Transport Committee propose conversion of ground floor at "Grey Mare" hotel, into works canteen.

Chesterfield.—E.C. propose preparation of scheme for extension of school meals service.

Heywood.—M.O.E. propose central kitchen at Tower-st.

Melton Mowbray.—Leics E.C. propose dining-hall and kitchen at Modern Girls' school, at £2,700.

Manchester.—E.C. approved canteen at St. Margaret Mary's R.C. school, New Moston.

Mansfield.—E.C. approved scheme for erection of kitchens at various schools, for M.O.E.

Salford.—Governors of Royal Technical College, Peel Park, The Crescent, propose canteen.

Spalding.—Lincs (Holland Division) E.C. propose dining halls and kitchens at Gleed and High schools.

Sutton.—West Riding E.C. propose dining-hall at school.

Whaley Bridge.—U.D.C. approved canteen at Council school for Derbyshire E.C.

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† Denotes *provisionally accepted*.
‡ Denotes *recommended for acceptance*.
§ Denotes *accepted subject to modification*.
¶ Denotes *accepted by H.M. Government departments*.

Cheltenham.—Erection of two experimental houses of foamed slag at Kipling-rd., St. Mark's, for T.C. G. Gould Marsland, B.Sc., M.Inst.C.E., B.C.: *A. C. Billings & Sons, Ltd., 54, Winchcombe-st., Cheltenham (subject to M.O.H. approval).

Hull.—Site works, excavations, construction of roads and sewers at Bilton Grange estate, for T.C. W. Morris, City E.: *Token Construction Co., Ltd., Station-rd., Thatcham, Newbury, Berks, £238,629.

King's Lynn.—Site levelling, construction of roads, footpaths and laying of surface drains and four sewers for advance preparation of housing sites for T.C.: *Taylor, Woodrow, Ltd., Ruislip-rd., Southall, Middx, £31,080.

Lancashire.—Buildings: *G. H. Pearse & Son, Derby-st., Bolton.

¶London (Air Ministry).—List of contracts to the value of £500 or over for week ended March 10:—

General maintenance work: Holborow & Sons, Ltd., Tetbury, Glos.

Painting work: Amalgamated Building Contractors, Ltd., London, S.W.1.

Electrical work: Anderson Angell & Co., Ltd., London, E.C.2.
Miscellaneous structural steelwork: Boulton & Paul, Ltd., Norwich.

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¶**London (Ministry of Works).**—Contracts placed by M.O.W. during week ending March 8:—

London: Building work, Kirk & Kirk, Ltd., Atlas Works, Putney, S.W.15.
Cardiganshire: Building work, Thomas & George, Tyrhos, Llechryd, Cardigan.
Ches: Building work, Edmund Nuttall & Son (Ldn.), Ltd., 22, Grosvenor-gdns., S.W.1.
Derbyshire: Building work, Demolition and Cons. Co., Ltd., 3, St. James-sq., S.W.1.
Durham: Building work, Sir R. McAlpine (Newcastle), Ltd., Carliol House, Newcastle-on-Tyne.
Glamorgan: Building work, T. C. Jones (Builders), Ltd., 37, Victoria-st., Merthyr Tydfil; Rogers & Davies, Humphrey-st. Yard, Swansea.
Glouc: Building work, John Laing & Son, Ltd., Mill Hill, N.W.7.
Hampshire: Building work, Brazier & Son, Ltd., 303, Portswood-rd., Southampton; Hamtun, Ltd., 20, Havelock-rd., Civic Centre, Southampton.
Lancs: Building work, Wm. Livesay & Son, Ltd., Nova Scotia Saw Mills, Hall-st., Blackburn.
Leics: Building work, Gee Walker & Slater & Co., Little Harewood Manor, Bletchley, Bucks.
Mon: Building work, T. Dickinson, Railway-bldgs., Tredegar.
Norfolk: Building work, John Cochrane & Sons, Ltd.,39 Victoria-st., S.W.1.
Warwickshire: Building work, Wilson Lovatt & Sons, Ltd., Ashley-pl., Victoria-st., S.W.1.
Yorks: Building work, A. W. King & Sons, Westbourne-gr., North Ormesby, Middlesbrough; Henry Boot & Sons, Ltd., Banner Cross Hall, Eccleshall-rd., South Sheffield; C. M. Yuill, Ltd., Villiers-st., West Hartlepool.

¶**London (War Dept.).**—Works contracts placed by War Dept. for week ended March 3:—

Stirlingshire: Building work, Wm. Sprunt & Co., Ltd., Bridge of Allan, Stirlingshire.
Yorks: Miscellaneous work, Sorrell (York), Ltd., York.
Lancs: Miscellaneous work, Realty Development Co., Ltd., Manchester.
Northampton: Hutting (erection), J. F. Booth & Sons, Banbury, Oxon.
Pembrokeshire: Miscellaneous work, W. Warlow, Hook, Pembs.
Berks: Roadwork, Shorters Construction Co., Ltd., London, N.W.11.
Hampshire: Roadwork, Trevor Construction Co., Ltd., London, W.1.

Newcastle-on-Tyne.—Conversion of premises at Shields-rd., into flats, for City Council: *H. Kindred, West-rd., Newcastle-on-Tyne, £1,266; erection of sculleries at schools, for E.C. Ouseburn, West Walker and St. Peter's schools: *A. Anderson (Contractors), Ltd., Stanmore-rd., Newcastle; Cruddas Park school: *G. Bainbridge, 358, West-rd., Newcastle.
Rotherham.—Erection of prefabricated building and alterations at Templeborough school, for E.C., in co-operation with United Steel Companies, Ltd. Vincent Turner, B.E.: *Beeden, Ltd., Thrybergh, nr. Rotherham, £1,182.
Sheffield.—Works for T.C. W. George Davies, City A. Strengthening of Newhall Bridge: *Sir William Arrol & Co., Ltd., Glasgow (in lieu of tender previously accepted).
West Bromwich.—Erection of sub-station, for C.B. J. G. Jefferson, M.Inst.C.E.: *S. J. Smith & Co. (Bidford), Ltd., Smith-rd., Wednesbury.

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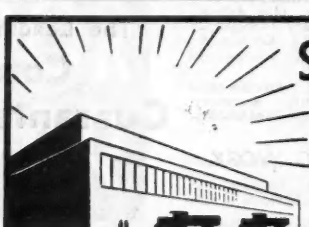
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